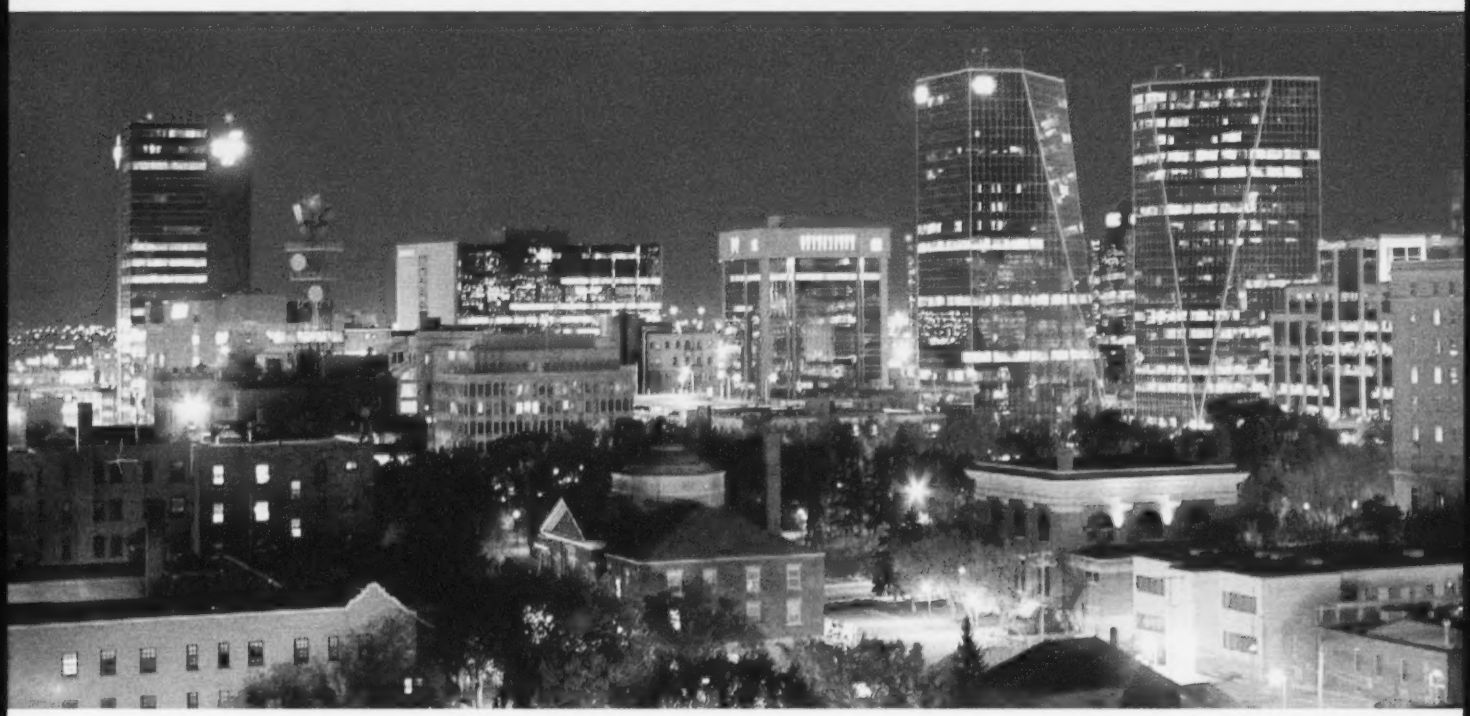
2009

CITY OF REGINA

WATER & SEWER UTILITY

AS APPROVED BY CITY COUNCIL



Regina

CITY OF REGINA

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Office of the City Manager
April 20, 2009

To: His Worship the Mayor,
and Members of City Council

Re: Water and Sewer Utility Budget

Each year City Council is required to adopt operating and capital budgets. There are three components to the budgets, the General Operating Budget, the Water and Sewer Utility Operating and Capital Budget and the General Capital Budget. This document is the Water and Sewer Utility Budget, including the 2009 Utility Operating Budget and the 2009 – 2013 Utility Capital Budget.

Budget Highlights

- Utility rates for 2009 were previously approved by City Council in 2007, when rates were adopted for 2008 through 2010. For an average residential customer, the 2009 rates result in a 9.3% increase or about $7.41 per month. The increase for a sample commercial customer is 10.2% or about $52.83 per month.

- The rates approved for 2009 will result in increased revenues of about 8.9%. This reflects a 9% increase in utility rates, the impact of additional customers and an increase in miscellaneous fees such as connection charges. Details on the rates for 2008 and 2009 are provided on pages 15 and 16 of this document.

- The 2009 Utility Operating Budget provides the funding necessary to meet Council's service objectives for water, wastewater and drainage. The total 2009 operating budget for the utility, including debt repayment, is about $51.7 million, an increase of $2.7 Million from the 2008 budget. The main driver of this increase is the negotiated salary increases for 2009. Other cost increases include additional costs for excavations, chemicals, electricity and the cost of water from the Buffalo Pound Water Treatment Plant. This total increase in operating costs is partially offset by a reduction in debt repayment costs.

- The 2009 – 2013 utility capital program totals $323.9 million, with 2009 totaling $52.6 million. In comparison, the total 2008 – 2012 utility capital program was about $262.8 million, with 2008's capital spending at $42.1 Million. Major 2009 projects include Wastewater Treatment Plan Expansion ($6.5 Million), Upgrades to the Sewage Forcemain between McCarthy pump station and the Treatment Plant ($6.5 Million), and considerable investment in Storm Drainage Channels ($7.3 Million).

- The 2009 – 2013 Capital Program proposes a total of $147.5 million in debt financing to meet the increased capital requirements (down $7.5 Million from what was contemplated for five years in 2008) - $16 million in 2009, $40 million in 2010, $57 million in 2011, $30

million in 2012, and $5 million in 2013. The timing of debt issues will largely depend upon the construction schedule for the wastewater treatment plant.

Public Reporting

In 2005, the Province adopted new regulations in Part V.1 of *The Cities Regulations* regarding Public Reporting on Municipal Waterworks. The regulations apply only to waterworks, however since the utility includes water, wastewater and drainage services, the information required by the regulations is provided for the entire utility. The information requirements include:

- Information on the rate policy and capital investment strategy as adopted pursuant to sections 22.3 and 22.4 of the regulations. The information required with respect to the City's rate policy is provided on pages 14 through 17 of this document. Information on the capital investment strategy is included in the Utility Capital Program Section of this document and in particular, the Infrastructure Overview Section starting on page 61.

- A financial overview providing the information outlined in the regulations. The data outlined in the regulations is included in the Financial Information Section of this document on pages 7 through 10. The regulations also require a comparison of the utility revenues to expenditures and debt payments, expressed as a ratio in accordance with the following formula:

$$\frac{\textbf{Revenues}}{\textbf{(Expenditures + Debt Payments)}}$$

  For 2009, based on the definitions in the regulations, the ratio for the Water and Sewer Utility is 1.36, based on revenues of $70,390,700, expenditures of $45,912,300 and debt repayments of $6,712,700. In accordance with the definition in the regulations, expenditures include the interest cost on the debt, while debt payments are the principal repayments on the debt.

  For 2009, the ratio indicates that revenues exceed expenditures and debt repayments by about 36%. By policy, the net revenue or surplus is used to fund transfers to the General Operating and General Capital budgets, with the balance used to fund future utility capital requirements. This ratio indicates that the utility is fully recovering its operating costs as well as provide for future capital requirements. The ratio is projected to increase over the next several years as additional funding is generated to pay for the expansion to the wastewater treatment plant.

- Information on the current reserves and deferred revenue, capital plans for infrastructure projects and the sources of funding for the capital projects are detailed in the Utility Capital Program Section of this document.

Capital Requirements and Funding

Regina's location, in a sensitive natural environment far from a major water source impacts on the standards and costs for water supply and wastewater treatment and disposal. Additional information on the regional setting and the implications for Regina is provided in the Introduction Section of this document.

Federal and Provincial standards have been strengthened in recent years due in part to public concerns resulting from water quality problems in other communities. Regina has been and will continue to be a leader in ensuring that utility operations adhere to standards and respect the environment. Regina's operators have met the certification requirements set out in regulations pursuant to *The Environmental Management and Protection Act.* A continued commitment to training, reporting and monitoring is required.

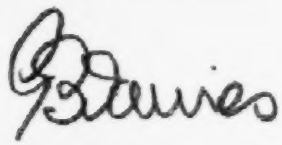
Capital projections have increased from about $262.8 million (the five year forecast in 2008) to $323.9. million for the years 2009 through 2013, an increase of 23.2%.

The details of projected capital requirements and the estimated cost of those requirements have a relatively high degree of uncertainty. As studies are completed and updated, it is likely that additional requirements will be identified and the timing of requirements will be advanced. In addition, as detailed designs for capital projects are developed, it is likely that cost estimates will increase. While the utility model includes projections for 20 years, it is highly likely that the projected capital requirements and the estimated costs of those requirements will be greater than the current projections.

If capital spending is deferred there is increased risk that the City would not be able to meet the standards (including the legislated standards) set for the provision of water, wastewater and drainage services. Failure to meet the standards would have significant implications for the City and the community.

Maintenance of the water, wastewater and drainage systems is a duty of the City in the interest of public health and safety. Ageing infrastructure, regulatory standards and Regina's environmental and geographic location all contribute to increasing costs, which result in a requirement to increase rates. The City has a duty to be responsible stewards of these essential utilities to promote the health, well being and economic opportunity of the community.

Respectfully submitted,



Glen B. Davies
City Manager

Introduction

2009 Budget Overview

The 2009 Water and Sewer Utility Operating and 2009 – 2013 Utility Capital Budgets reflect Regina's commitment to maintaining safe and secure utility operations. Across North America, water and sewer rates are increasing as utilities face challenges relating to:

- replacement of ageing infrastructure
- expansion of capacity
- improvements required to meet more stringent regulations and treatment standards.

Regina faces particular challenges in operating a utility due to its location, away from any major rivers or lakes. Capital expenditures in the range of $130 million are required over the next five to ten years to upgrade and expand its wastewater treatment plant. The capital expenditures will require significant debt financing over the next decade.

These cost pressures were reflected in a three year rate policy approved by City Council in November of 2007, which will result in rate increases of 9% each year for 2008, 2009 and 2010. While these increases are significant, they are necessary to ensure regulatory compliance and maintain the integrity and the sustainability of the utility systems. Comparisons are difficult because of the wide variety in rate structures used in different communities. Despite these increases, Regina's rates remain within the mid to lower end of the rates for water, wastewater and drainage services in Canada.

In 2010, after three years of 9% increases, the price of a cubic metre of water will be $1.14, equivalent to two thousand 500 millilitre bottles, which would cost about $4,000.

As outlined in the 2009 General Operating Budget, City Council has established its Vision for Regina:

Imagine Regina 2020
Canada's most…
Vibrant,
Inclusive,
Attractive,
Sustainable community
Where people live in Harmony
And Thrive in opportunity.

As part of the effort to achieve this vision, the Administration developed a corporate strategic plan for 2008 through 2012 – *Accelerating Excellence*, and work continues on a performance management process to align with City Council's strategic direction.

The Corporate Strategic Plan - *Accelerating Excellence* - identified four strategic priorities:

- Managing Growth and Community Development
- Strengthening City Infrastructure and Managing Assets
- Achieving Operational Excellence
- Ensuring Organizational Capacity and Effectiveness

The Utility Budget Development process included an assessment of new requests and existing funding, both operating and capital, in terms of their contribution to achieving these objectives.

Service Overview

The Water and Sewer Utility provides water, wastewater and drainage services primarily to customers in Regina. The services provided through the utility include:

- **Water Supply, Pumping and Distribution**

  The water system provides water for residential, institutional, commercial and industrial customers as well as water for fire protection. The system serves a population of approximately 200,000 including some customers outside the City limits. Service goals include:

  - Providing water that meets or exceeds Provincial water quality standards and objectives.
  - Providing water at adequate pressure and in sufficient quantity to satisfy the requirements for domestic and commercial use, irrigation and fire protection.
  - Identifying and implementing improvements to the water system through long range planning, monitoring, improved operation, capital works and new technology.

- **Wastewater Collection and Treatment**

  The wastewater system collects wastewater from all residential, institutional, commercial and industrial customers in the City. Wastewater treatment and final effluent meets Provincial environmental standards. Service goals include:

  - Collecting domestic, commercial and industrial wastewater in the City and delivering it to wastewater treatment facilities.
  - Producing a treated wastewater effluent that is biologically and physically safe for the environment and meets the requirements of the provincially issued operating permit.
  - Ensuring solids removed from the wastewater are treated and disposed of in an environmentally responsible manner.

- **Drainage**

  The drainage system controls water runoff resulting from rainfall and melting snow in and around the city. The system serves approximately 60,000 residential, institutional, commercial and industrial properties. Service goals include:

  - Operating and maintaining the drainage system to control run off water within the city to minimize inconvenience, property damage and danger to the public.
  - Monitoring the potential for flood conditions in Wascana Creek and the storm channels and carrying out flood control measures as required.

Regional Setting

Regina's location is a sensitive natural environment far from a major water source and is unique among most major Canadian cities. Regina's location impacts on the standards and costs for water supply and wastewater treatment and disposal. The map on the next page provides an overview of the regional setting.

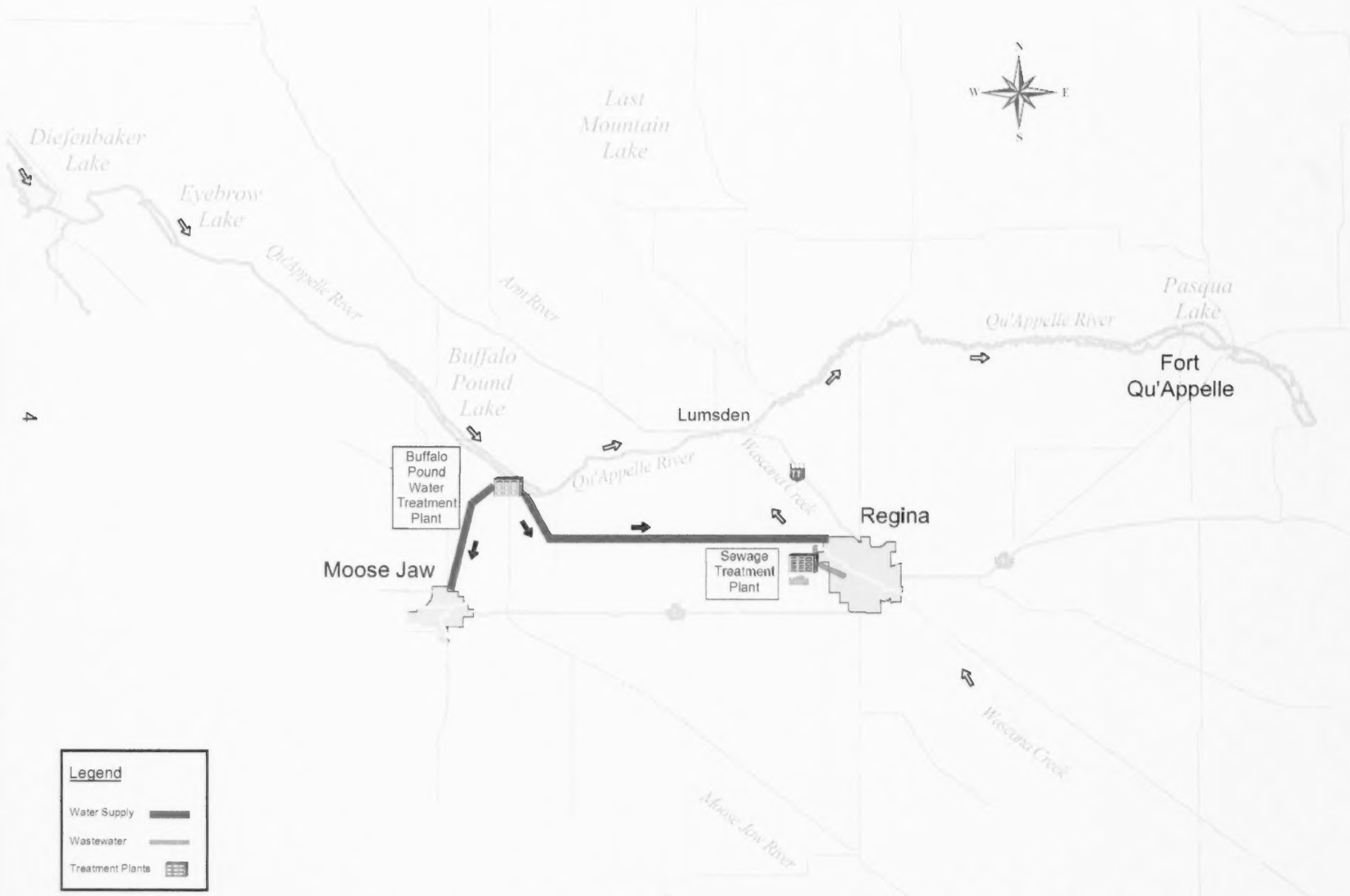
Regina's water supply originates with snow melt and rainfall in the eastern Rocky Mountains that feed the tributaries of the South Saskatchewan River. The Gardiner and Qu'Appelle dams impound the South Saskatchewan River to form Diefenbaker Lake from which water is released into the Qu'Appelle River. The Qu'Appelle River flows through Buffalo Pound Lake, the source of Regina and Moose Jaw's treated water supply. Buffalo Pound Lake is also the water source for large industrial users including the SaskFerco fertilizer plant and the Mosaic potash mine at Belle Plaine.

From Buffalo Pound Lake the Qu'Appelle River flows eastwards through the Fishing Lakes on its way to joining the Assiniboine in the east of the province. Saskatchewan Watershed Authority manages water releases from Lake Diefenbaker to support a variety of uses in the Qu'Appelle valley besides water supply. Releases maintain lake levels for recreation use and provide water for agricultural irrigation. The Watershed Authority also operates dams and control structures maintaining water levels when flows are low and controlling flooding when flows are high.

Wascana Creek is a seasonal stream that originates to the east of Regina and flows through the City to join the Qu'Appelle downstream of Lumsden. Regina's storm water run off and treated wastewater flow into Wascana Creek. For much of the year these sources are the only water that feeds Wascana Creek, and without these sources, the Creek would be dry.

The nature of the Qu'Appelle system is influenced by both its natural setting and its many uses. Abundant sunshine and naturally occurring nutrients result in a highly productive biological system typical of prairie water bodies. Human activities (agriculture and development) create their own demands and influence the system.

Regina and Region



Regina is the centre of an economic region comprised of approximately 40 communities. Initiatives are underway to strengthen partnerships and to collaborate on mutual opportunities and interests. Regina's utility systems already provide the basis for regional services and over time their role will increase.

Regina's water supply and wastewater treatment systems are adapted to provide treatment that is appropriate to its natural setting and to minimize the city's influence on the receiving environment.

Regulatory Environment

Saskatchewan's Ministry of Environment regulates water supply and distribution, and wastewater collection, treatment and disposal. Permits for the construction and operation of water and wastewater systems require specific standards to protect human health and to minimize impacts on the natural environment. A system of routine testing, inspections and annual reports ensures compliance.

Saskatchewan Watershed Authority is responsible for management of Saskatchewan's surface water and ground water resources. The Authority regulates the allocation of water, establishes management plans for the province's river basins and is responsible for land drainage and wetland preservation and enhancement. In 2004, the Authority initiated a consultative process to develop a plan for the Upper Qu'Appelle. City staff and Buffalo Pound Water Administration Board staff were actively involved in the planning process, which will complete in 2009.

In 2002, the Province responded to public concerns highlighted by the North Battleford cryptosporidium outbreak and subsequent inquiry by passing new regulations pursuant to *The Environmental Management and Protection Act*. This Act with its regulations introduced a range of measures to ensure consistent water quality and appropriate environmental protection throughout Saskatchewan. The requirements include mandatory operator certification, routine facility inspections, testing and reporting.

The mandatory certification program requires water supply distribution, wastewater collection, and treatment operations to be under the direction of certified operators. The level of certification depends on the size and complexity of the system with level one being the simplest and smallest systems and, level four the largest and most complex. Regina's systems are designated as level four systems. The program provided a transition period to allow operators to achieve the required certification before July 15, 2005. Regina has certified operators and is organizationally designed to meet the certification requirements on an ongoing basis.

In 1999, the Federal Government enacted *The Canadian Environmental Protection Act*, (CEPA). This Act together with *The Fisheries Act* provides authority to regulate municipal waste water effluents and control discharges to receiving waters. CEPA regulations require municipalities to address any substances deemed to be "toxic" under CEPA. At present only two substances, ammonia and chlorination by-products have been designated "toxic". Ammonia is present in Regina's wastewater but there is a list of several hundred substances that could be so designated. Municipalities and Provincial regulators have been very concerned that Federal regulation with inflexible broadly based national standards could replace the current site-specific regulatory regime. The Federal Government has issued a Guideline for addressing ammonia. It is expected the Federal Government will issue a regulation and timelines for addressing ammonia in wastewater discharges under *The Fisheries Act* in 2009.

The Canadian Council of Ministers of the Environment (CCME) is working on a national strategy to deal with Municipal Waste Water Effluents. The CCME recommendations are scheduled to be completed by mid 2009. Implementation schedules will be completed on a case-by-case basis following adoption of the recommendations by the Federal Government in a regulation under *The Fisheries Act*. This CCME initiative, which has the support of the Federal Government, addresses the need to maintain a national approach to pollution prevention and environmental protection while recognizing local conditions and requirements. The CCME initiative may result in a more pragmatic approach to timing and implementing municipal wastewater effluent improvements than the initial CEPA Pollution Prevention Plan approach.

Receiving environmental impacts are a key consideration for municipal wastewater effluent standards. City staff and Saskatchewan Ministry of Environment have discussed, and are in broad agreement, on the principle that treated effluent standards for the City's upgraded wastewater treatment plant should reflect and be determined by, environmental effects in the Qu'Appelle system. To address this principle, the City will undertake a significant monitoring program to document current conditions and help project future conditions in the Qu'Appelle system.

The City is involved in the Provincial Government's Duty to Consult process for the Wastewater Treatment Plant Expansion Project. This will continue through 2009.

Regina's practice has been to provide water and wastewater treatment that meets all regulatory requirements, anticipates potential higher standards and, where practical, meets the higher requirement. Costs of regulatory compliance, such as the costs of training, certification, documentation and reporting will be higher than in the past. As well, there will be significantly higher capital expenditures required to meet the standards. The 2009 Utility Operating and 2009-2013 Utility Capital Budgets reflect these factors.

Financial Information

Customer Impact of Utility Rates

The 2008 – 2010 water, wastewater and drainage rates were approved by City Council in 2007. Examples of the impact of the 2009 rates are provided below.

Average Home Owner

The following chart illustrates the impact of the 2009 rates on a homeowner who uses 360 cubic metres of water per year. The water consumption is typical for a family of two adults and two children, in a home with two bathrooms, a dishwasher and washing machine, on a lot with typical landscaping for Regina. **The cost increase resulting from the 2009 rates is about $7.41 per month for the average homeowner.**

2009 Rate Impact - Average Home Owner

	2008	2009	Dollar Change	Per Cent Change
Water				
Basic Charge	$ 146.00	$ 160.60	$ 14.60	
Volume Charge	345.60	378.00	32.40	
Total Water	491.60	538.60	47.00	9.6
Wastewater				
Basic Charge	113.15	124.10	10.95	
Volume Charge	250.92	274.54	23.62	
Total Wastewater	364.07	398.64	34.57	9.5
Drainage Infrastructure Levy	98.55	105.85	7.30	7.4
Total Annual Utility Charges	$ 954.22	$ 1,043.09	$ 88.87	9.3

Sample Commercial Customer

The following chart illustrates the impact of the 2009 rates on a commercial customer with a 40 mm meter that uses 3,000 cubic metres of water per year, with a property size in the range of 3,001 to 5,000 m^2. This water consumption would be typical for a strip-mall with a restaurant and a hair salon with a parking lot and minimal landscaping.

2009 Rate Impact - Sample Commercial Customer

	2008	2009	Dollar Change	Per Cent Change
Water				
Basic Charge	$ 262.80	$ 288.35	$ 25.55	
Volume Charge	2,880.00	3,150.00	270.00	
Total Water	3,142.80	3,438.35	295.55	9.4
Wastewater				
Basic Charge	204.40	222.65	18.25	
Volume Charge	2,499.00	2,790.00	291.00	
Total Wastewater	2,703.40	3,012.65	309.25	11.4
Drainage Infrastructure Levy	394.20	423.40	29.20	7.4
Total Annual Utility Charges	$ 6,240.40	$ 6,874.40	$ 634.00	10.2

Utility Operating Budget Summary

Details ($000's)	2008 Budget	2008 Actual	2009 Budget	Change 2008 to 2009 Dollar Change	Change 2008 to 2009 Per Cent Change
Operating Revenue:					
Water	32,883.7	33,594.6	**35,968.0**	3,084.3	9.4
Wastewater	23,963.4	24,004.6	**26,083.0**	2,119.6	8.8
Drainage	7,252.7	7,366.5	**7,842.9**	590.2	8.1
Other	536.8	303.0	**496.8**	(40.0)	(7.5)
Total Operating Revenue	64,636.6	65,268.7	**70,390.7**	5,754.1	8.9
Operating Expenditures:					
Water[1]	13,957.8	15,129.6	**10,485.4**	(3,472.4)	(24.9)
Wastewater[1]	7,275.5	7,442.1	**15,072.7**	7,797.2	107.2
Drainage	1,221.5	1,052.4	**1,070.2**	(151.3)	(12.4)
Engineering and Operations	8,404.6	7,298.0	**6,391.2**	(2,013.4)	(24.0)
Utility Administration	5,873.6	5,536.8	**6,781.5**	907.9	15.5
Transfer to General Operating	5,030.4	5,030.4	**6,111.3**	1,080.9	21.5
Debt Costs	7,166.9	7,132.5	**6,712.7**	(454.2)	(6.3)
Total Operating Expenditures	48,930.3	48,621.8	**52,625.0**	3,694.7	7.6
Utility Operating Surplus	15,706.3	16,646.9	**17,765.7**	2,059.4	13.1
Distribution of Surplus:					
Transfer to General Capital:					
MRIF Funding[2]	1,700.0	-	-	(1,700.0)	(100.0)
Transfer to General Utility Reserve	14,006.3	16,646.9	**17,765.7**	3,759.4	26.8
Total Surplus	15,706.3	16,646.9	**17,765.7**	2,059.4	13.1

Note:

1. *Water and Wastewater Operations restructured select operations in 2009.*
2. *Municipal Rural Infrastructure Funding.*

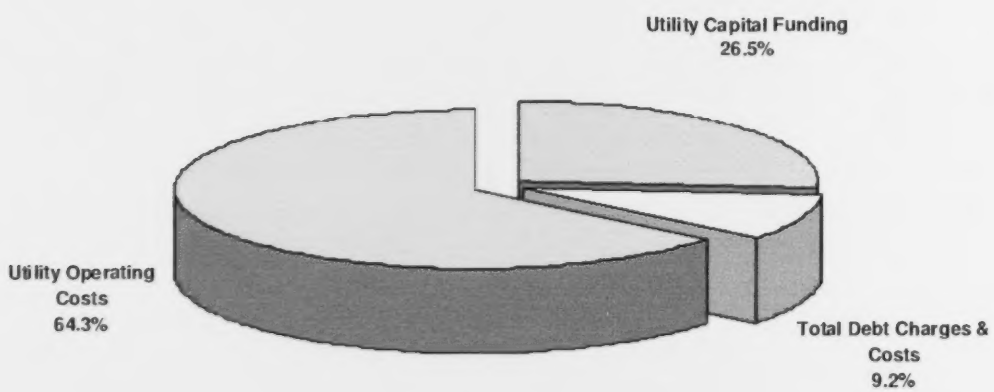
Utility Capital Program Summary

	2009	2010	2011	2012	2013	Total
Capital Expenditures ($000's)						
Water Supply, Pumping & Distribution	**13,186**	16,135	16,260	15,405	9,490	70,476
Wastewater Collection & Treatment	**25,057**	46,055	71,023	34,765	5,555	182,455
Drainage	**14,310**	27,935	8,035	6,885	13,885	71,050
Total Expenditures	**52,553**	90,125	95,318	57,055	28,930	323,981
Capital Funding ($000's)						
General Utility Reserve	**15,791**	18,663	18,862	18,196	11,724	83,236
Service Agreement Fees - Utility	**17,132**	31,120	16,894	5,509	10,500	81,155
Debt	**15,632**	40,080	57,036	29,851	4,900	147,499
Other External Contributions	**3,998**	262	2,526	3,499	1,806	12,091
Total Funding	**52,553**	90,125	95,318	57,055	28,930	323,981

Utility Operating Revenues

Revenue Details ($000's)	2008 Budget	2008 Actual	**2009 Budget**	Change 2008 to 2009 Dollar Change	Change 2008 to 2009 Per Cent Change
Water Revenue					
Metered Water Charges	32,317.7	32,865.3	**35,442.4**	3,124.7	9.7
Unmetered Water Charges	209.0	113.6	**208.6**	(0.4)	(0.2)
Other Water Service Charges	357.0	615.8	**317.0**	(40.0)	(11.2)
Subtotal	32,883.7	33,594.7	**35,968.0**	3,084.3	9.4
Wastewater Revenue				-	
Wastewater Charges	23,913.4	24,004.6	**26,033.0**	2,119.6	8.9
Wastewater Service Surcharges	50.0	-	**50.0**	-	-
Subtotal	23,963.4	24,004.6	**26,083.0**	2,119.6	8.8
Drainage Revenue				-	
Drainage Infrastructure Levy	7,252.7	7,366.5	**7,842.9**	590.2	8.1
Other Revenue				-	
Servicing Agreement Fees	172.6	-	**-**	(172.6)	-
Late Payment & Transfer Charges	280.0	181.9	**240.0**	(40.0)	(14.3)
Claims Revenue	42.0	23.2	**42.0**	-	-
Other Revenues	42.2	97.8	**214.8**	172.6	409.0
Subtotal	536.8	302.9	**496.8**	(40.0)	(7.5)
Total Utility Revenue	64,636.6	65,268.7	**70,390.7**	5,754.1	8.9

Use of 2009 Utility Revenue



Utility Operating Expenditures

Expenditure Details ($000's)	2008 Budget	2008 Actual	2009 Budget	Change 2008 to 2009 Dollar Change	Change 2008 to 2009 Per Cent Change
Water					
Water Supply	6,038.0	6,114.2	**7,687.7**	1,649.7	27.3
Water Pumping	1,110.7	1,021.1	**1,025.0**	(85.7)	(7.7)
Water Distribution[1]	6,809.1	7,994.2	**1,772.7**	(5,036.4)	(74.0)
Subtotal	13,957.8	15,129.5	**10,485.4**	(3,472.4)	(24.9)
Wastewater					
Wastewater Collection	2,063.5	2,226.2	**9,968.7**	7,905.2	383.1
Wastewater Treatment	5,212.0	5,216.0	**5,104.0**	(108.0)	(2.1)
Subtotal	7,275.5	7,442.2	**15,072.7**	7,797.2	107.2
Drainage	1,221.5	1,052.4	**1,070.2**	(151.3)	(12.4)
Engineering and Operations					
General Administration	877.0	763.0	**1,592.2**	715.2	81.6
Water, Wastewater Collection and Drainage Engineering	1,731.0	1,216.0	**2,226.0**	495.0	28.6
Environmental Engineering	376.1	27.4	**1,248.6**	872.5	232.0
Development Engineering	1,103.3	1,278.9	**1,098.7**	(4.6)	(0.4)
Operations Administration	4,120.4	3,808.4	**-**	(4,120.4)	(100.0)
Facilities	196.8	204.3	**225.7**	28.9	14.7
Subtotal	8,404.6	7,298.0	**6,391.2**	(2,013.4)	(24.0)
Utility Administration					
Customer Service, Billing & Collection	2,922.3	2,585.5	**3,549.7**	627.4	21.5
Transfer to General Operating	5,030.4	5,030.4	**6,111.3**	1,080.9	21.5
Utility Administration Charge	2,951.3	2,951.3	**3,231.8**	280.5	9.5
Subtotal	10,904.0	10,567.2	**12,892.8**	1,988.8	18.2
Debt Costs	7,166.9	7,132.5	**6,712.7**	(454.2)	(6.3)
Total Utility Expenditures	48,930.3	48,621.8	**52,625.0**	3,694.7	7.6

Note:

1. *Water and Wastewater Operations restructured select operations in 2009.*

Staffing Summary

FTE's by Department	2007	2008	2009
Public Works			
Permanent	152.1	165.9	165.8
Casual	31.1	30.1	31.8
Planning & Development			
Permanent	13.0	14.8	14.8
Casual	1.6	1.7	1.7
Corporate Services			
Permanent	26.0	26.8	27.8
Casual	1.3	3.3	3.3
Total	225.1	242.6	245.2

Analysis of Operating Budget Change

Details of Operating Budget Changes	($000's)
2008 Operating Budget Before Transfers and Debt	33,782.4
1. Salaries and Benefits - Includes cost changes resulting from in-range progression increases, classification reviews, general employer benefit costs (EI, CPP, WCB, etc. which increase proportionate with salaries), and the City's portion of increases in employee pension contributions. (Base)	495.6
2. Staffing Allocations - Staff previously allocated 30% to the Utility have been adjusted to 40% to better reflect the work actually performed. (Base)	237.6
3. Customer Service Allocation - In the past, 50% of the expenditure budget of the Customer Service area was allocated to the Utility, based on volume of work. Since Customer Service is now part of Service Regina, the allocation was reviewed based on percentage of calls and cashier transactions and has been allocated to the Utility. (Base)	(218.3)
4 Cut Repairs Materials - Concrete and asphalt cuts have increased dramatically. This increase covers the rising costs of material for concrete and asphalt repairs. Projected increases are based on estimates provided by Roadways. (Base)	110.0
5. Hired Trucks - Hired truck rates have increased. The hired trucks have added a surcharge of 11% as of May 2008 and are expected to change again in May 2009. (Base)	101.0
6. Trench Backfill - The costs for fill materials used in excavations have increased in 2009. The costs of 3/8 to 5/8" rock, hydrant rocks, cold mix and gravel have increased for 2009. This is a base change to cover the costs. (Base)	70.0
7. Landfill rates - Wastewater treatment deposits accumulated solid wastes from its process at the landfill, and compensates the landfill as would any other user. The rates for the landfill have increased $2.00/tonne in 2009. (Base)	30.0
8. Utility Business Analyst - required to address ongoing system upgrades and patches and to provide stable support for the system. As well, this level of staffing will provide capacity to perform system reviews, providing better data to support ongoing process improvements. (Addition)	77.6
9. Expanded Laboratory Services - Additional laboratory staff to provide testing required to meet regulations. (Addition/Special)	69.2
10. Collection Coordinator - This position was implemented as a "special" in 2008 in response to capacity problems in managing Utility Billing Collections. In order to provide a sufficient level of customer service, as well as supporting improvements in collection processes, a supervisory position was required for the collection area. (Addition)	61.0

Details of Operating Budget Changes	($000's)
11. Addition of an Information Technology person to support ongoing system upgrades and patches and to provide support for the system along with other IT related projects. (Addition)	47.7
12. Riverside Dyke Inspection and Maintenance - Riverside Dyke Inspection and Maintenance is related to the dyke along Wascana Creek that was upgraded in 2004. The Riverside Dyke upgrade project included a Structural Monitoring & Maintenance Manual and a Vegetation Management Plan for the dyke. The funds for these activities are required to ensure the long term integrity of the dyke. Should these activities not take place, residents within the Cathedral area are at risk of severe flooding during extreme storm and spring events. These activities will take place in partnership with Parks and Open Space Management. (Addition)	45.0
13. Wastewater Trunk System - In 2008, an assessment of the wastewater trunk system was started to provide a working dynamic model of the City's wastewater system. This assessment will provide a model that incorporates previous studies with new information from areas previously not assessed. (Special)	400.0
14. In-Pipe Technologies Pilot Study - The technology is intended to provide pre-treatment of wastewater prior to reaching the Wastewater Treatment Plant. Results are intended to control grease and odour, reduce greenhouse gas emissions, and reduce electrical requirements at the Wastewater Treatment Plant. (Special)	400.0
15. Legal Claims - To resolve outstanding legal proceedings. (Special)	230.0
16. Classification Retroactive Pay - Retroactive Pay for several positions throughout Public Works that have not been classified to date. There are several positions that have had classification requests submitted throughout Public Works. (Special)	212.5
17. Asset Management - This item will provide an operating budget to continue with the development of the Asset Management Framework for the underground utilities. In order to fully establish the Asset Management framework, essential elements need to be established such as an accurate inventory of existing assets, the condition of the assets, level of service expectations, as well as others. This effort will use both internal and external forces. (Special)	100.0
18. Contracted Services - Environmental Monitoring - Provision for environmental studies on Wascana and Qu'Appelle River Lake Systems to assess impacts of urban treated wastewater as required by provincial and federal requirements. (Special)	100.0
19. Collections Field Services Resources - The collection process for Utility Billing is being changed significantly in order to treat customers more equitably, and reduce write-offs due to uncollectible accounts. It is expected that in the first year of the new process, additional field resources will be required to manage the temporary increase in workload from the new process. (Special)	45.9
20. Sewer Bursting Tool - A tool was manufactured to burst sewer pipes during the relining process and produce savings by causing less surface disruption. Our goal is set at saving 30% of the city walks removed during sewer connection replacements. Our objective is to minimize walk replacement by 30% in this activity. (Reinvestment)	(10.0)
21. Other miscellaneous costs include funding for a public works bylaw review, water conservation program improvements, a projected increase in bad debt losses relating to the increase in budgeted revenues, business process improvement , education and training, and additional Human Resources support.	175.4
2009 Budget	36,562.6

Note:
Base request funding – represents an increase in cost necessary to maintain current service levels.
Addition request funding – represents expenditures that would be ongoing past the current budget year.
Special request funding – represents one-time expenditures for the current budget year.
Reinvestments – represents cost savings and controllable and sustainable revenue increases.

Utility Rates and Rate Policies

Section 22.3 of *The Cities Regulations* requires Council to adopt a rate policy that sets out the rates or fees to be charged to consumers for the use of water. The policy must include the method used to determine those rates or fees. In establishing utility rates, the following policies have been adopted in the past by City Council:

1. Utility rates are to be established such that they are sufficient, based on long term projections, to fully fund utility operating costs, interest cost and debt repayments, capital requirements, and transfer policies, taking into account the operating and infrastructure requirements of the utility required to meet the service goals of the utility, as determined by City Council or prescribed by legislation. The objectives for the Utility's rate structure are:

    - **Financial Self Sufficiency** – Utility rates must generate revenue adequate to meet all operating and capital costs of the Utility in both the short and the long term.

    - **Conservation** – Utility rates should encourage customers to use water responsibly.

    - **Reduction of Peak Demand** – The Utility rates should encourage water conservation during summer months, reducing the need for infrastructure investment and higher rates.

    - **Equity** – The Utility rates should result in a charge to customers according to the cost of services they utilize.

2. The rate structure for water and wastewater will include a base fee that varies according to the size of the water meter. The variation in the base rate by meter size will be based on the schedule recommended by the American Water Works Association (AWWA). The ratios for the base rate based on meter size are shown in the following table.

Water and Wastewater Base Fee Ratios

Meter Size	AWWA Standard Ratio	Meter Size	AWWA Standard Ratio
15 mm	1.0	75 mm	11
18 mm	1.0	100 mm	14
25 mm	1.4	150 mm	21
40 mm	1.8	200 mm	29
50 mm	2.9		

3. The rate structure for water and wastewater will include a uniform rate for each cubic metre of water consumed and each cubic metre of deemed wastewater flow. For water, the uniform rate is applied to all consumption. For wastewater, the deemed volume is a percentage of the water consumption. The percentages are:

    - For residential customers, the wastewater volume is 82% of the water consumption;

    - For multiple unit residential properties, the percentage is 95% of the water consumption; and,

    - For institutional, commercial and industrial properties, the percentage is 98% of the water consumption.

4. The rate structure for the storm drainage infrastructure levy will be based on the size of the property, with larger properties paying a higher levy. The ratios approved by City Council in 2001 (CR01-189) are shown in the following table. The drainage levy applies irrespective of whether the property is connected to the water or wastewater systems.

Drainage Infrastructure Rate Ratios

Area of Property	Rate Ratio	Area of Property	Rate Ratio
0 to 1,000 m^2	1.0	17,001 to 19,000 m^2	18.0
1,001 to 3,000 m^2	2.0	19,001 to 21,000 m^2	20.0
3,001 to 5,000 m^2	4.0	21,001 to 23,000 m^2	22.0
5,001 to 7,000 m^2	6.0	23,001 to 25,000 m^2	24.0
7,001 to 9,000 m^2	8.0	25,001 to 27,000 m^2	26.0
9,001 to 11,000 m^2	10.0	27,001 to 29,000 m^2	28.0
11,001 to 13,000 m^2	12.0	29,001 to 31,000 m^2	30.0
13,001 to 15,000 m^2	14.0	Over 31,000 m^2	32.0
15,001 to 17,000 m^2	16.0		

5. **In the setting of rates, the utility must at minimum present a balanced budget**, with any surplus intended for the following purposes:

   - **Transfer to the General Utility Reserve** –The purpose of the reserve is to provide a source of financing for capital projects. The balance of the Utility's surplus, after other transfers, is transferred to the General Utility Reserve. For 2009, the transfer is budgeted at **$18.7 million.** Through the use of the Utility Model, an overall requirement for capital funding is established. Utility rates are set in order to provide sufficient surpluses to cover the capital costs over the twenty years of the model.

     In the event that the Utility incurs an operating deficit in a given year, the deficit would also be funded from the reserve.

6. **The Utility Operating Expenses also include a transfer to the City in lieu of taxes.** This transfer is a payment in lieu of taxes to the General Operating Fund. Any organization or utility operating in a municipality would be required to pay the municipality either property taxes or an 'Access Fee' for the rights to use or access civic assets in the delivery of service. Policies on these types of fees vary from city to city. Calgary's utility pays 10% of revenue plus a 10% return on equity. The City of Saskatoon's utility pays a franchise fee based on 10% of revenue. Winnipeg's is also 10%, with dividends paid. Moose Jaw's rate is 5% of revenue. Regina's transfer is the total of the following amounts:

   - 7.5% of the previous years budgeted revenues for billed water consumption, wastewater charges and drainage infrastructure levy; and,

   - An amount ($675,000) estimated to be 3/7^{ths} of the GST rebate received by the Utility. This amount is the additional rebate provided by the Federal Government starting in 2004.

   For 2009, these amounts total $6,111,300.

   City Council's practice has been to establish utility rates every three years, with a three-year schedule of rates adopted. In 2007, rates were set for the 2008 – 2010 period.

The approved utility rates for 2008 through 2010 are shown in the following tables. Rates are billed monthly and are based on a daily fixed charge.

Water Rates

	Previously Approved Rate	Current Rate Schedule		
	2007	2008	2009	2010
Base Fee per Month:				
15 mm/18 mm water meter	$ 0.37	$ 0.40	**$ 0.44**	$ 0.48
25 mm water meter	0.52	0.56	**0.62**	0.67
40 mm water meter	0.66	0.72	**0.79**	0.86
50 mm water meter	1.07	1.16	**1.28**	1.39
75 mm water meter	4.06	4.40	**4.84**	5.28
100 mm water meter	5.16	5.60	**6.16**	6.72
150 mm water meter	7.75	8.40	**9.24**	10.08
200 mm water meter	10.70	11.60	**12.76**	13.92
Volume Charge:				
Charge per m^3	$ 0.88	$ 0.96	**$ 1.05**	$ 1.14

Wastewater Rates

	Previously Approved Rate	Current Rate Schedule		
	2007	2008	2009	2010
Base Fee per Month:				
15 mm/18 mm water meter	$ 0.28	$ 0.31	**$ 0.34**	$ 0.37
25 mm water meter	0.40	0.43	**0.48**	0.52
40 mm water meter	0.52	0.56	**0.61**	0.67
50 mm water meter	0.83	0.90	**0.99**	1.07
75 mm water meter	3.16	3.41	**3.74**	4.07
100 mm water meter	4.02	4.34	**4.76**	5.18
150 mm water meter	6.02	6.51	**7.14**	7.77
200 mm water meter	8.32	8.99	**9.86**	10.73
Volume Charge:				
Charge per m^3	$ 0.78	$ 0.85	**$ 0.93**	$ 1.01

Storm Drainage Rates

Billed Monthly	Previously Approved Rate	Current Rate Schedule		
	2007	2008	2009	2010
0 to 1,000 m^2	$ 0.25	$ 0.27	**$ 0.29**	$ 0.32
1,001 to 3,000 m^2	$ 0.49	$ 0.54	**$ 0.58**	$ 0.64
3,001 to 5,000 m^2	$ 0.98	$ 1.08	**$ 1.16**	$ 1.28
5,001 to 7,000 m^2	$ 1.48	$ 1.62	**$ 1.74**	$ 1.92
7,001 to 9,000 m^2	$ 1.97	$ 2.16	**$ 2.32**	$ 2.56
9,001 to 11,000 m^2	$ 2.46	$ 2.70	**$ 2.90**	$ 3.20
11,001 to 13,000 m^2	$ 2.95	$ 3.24	**$ 3.48**	$ 3.84
13,001 to 15,000 m^2	$ 3.44	$ 3.78	**$ 4.06**	$ 4.48
15,001 to 17,000 m^2	$ 3.93	$ 4.32	**$ 4.64**	$ 5.12
17,001 to 19,000 m^2	$ 4.43	$ 4.86	**$ 5.22**	$ 5.76
19,001 to 21,000 m^2	$ 4.92	$ 5.40	**$ 5.80**	$ 6.40
21,001 to 23,000 m^2	$ 5.41	$ 5.94	**$ 6.38**	$ 7.04
23,001 to 25,000 m^2	$ 5.90	$ 6.48	**$ 6.96**	$ 7.68
25,001 to 27,000 m^2	$ 6.39	$ 7.02	**$ 7.54**	$ 8.32
27,001 to 29,000 m^2	$ 6.89	$ 7.56	**$ 8.12**	$ 8.96
29,001 to 31,000 m^2	$ 7.38	$ 8.10	**$ 8.70**	$ 9.60
Over 31,000 m^2	$ 7.87	$ 8.64	**$ 9.28**	$ 10.24

Utility Model

The purpose of the model is to project future operating revenues and expenditures along with capital requirements and capital funding. The major decisions in generating the projections for the utility model are:

- **Utility Rates** – While the objective is to minimize the need for rate increases, a parallel objective is to ensure required rate increases are gradual, rather than having large increases when major capital expenditures are required.

- **Capital Expenditures** – There are service goals for each component of the utility that determine the long term capital requirements. There is some flexibility in planning for capital expenditures. The utility model can be used to evaluate the financial implications of alternate schedules for capital expenditures.

- **Capital Funding** – Historically, capital funding has been provided through the issuing of debt or the use of internal reserves. The utility model can be used to evaluate the implications of the use of debt.

The utility model is based on the following assumptions:

- **Water Consumption** – The model uses an annual billable water consumption figure of almost 24 million cubic metres. The model is based on the current trend for water consumption and the assumption that total consumption will not change significantly in the future.

- **Operating Costs** – The model uses the 2009 operating budget and applies an inflation rate of 3% per year to forecast costs for the next 20 years. The cost of water supplied by the Buffalo Pound Water Treatment Plant is projected to increase at a rate of 5% per year. Actual costs will differ from the projected costs over time, but the assumptions are considered reasonable for the purpose of the model.

- **Utility Rates** – The utility rates approved for 2008 to 2010 are used in the model. **For the period 2008 through 2010, rate increases will be 9% per year.** Future rate increases are dependent primarily on the projected level of capital expenditures. Changes in future capital requirements will result in a change in future rate requirements.

- **Capital Expenditures** – The model accommodates the capital expenditures in the 2009 – 2013 Utility Capital Program, along with future capital requirements based on a 20-year capital expenditure plan. The current version of the utility model has projected capital costs (based on current dollars) of over $400 million from 2013 to 2027.

- **Capital Funding** – The model includes projections for capital funding from the General Utility Reserve and Utility Servicing Agreement Fees. Capital funding beyond that available from the reserve or Servicing Agreement Fees must be provided through external financing. **Capital financing requirements by debt issuance in the 2009 – 2013 Utility Capital program total $148 million; $16 million in 2009, $40 million in 2010, $57 million in 2011, and $30 million in 2012, $5 million in 2013. Additional debt financing is projected to be required beyond 2013.**

Utility Customers

The Water and Sewer Utility provides services to a population of approximately 200,000 including service to some customers and communities outside of the City limits. The following tables provide information on the number and categories of utility customers.

Water and Sewer Utility Customers

	Water Customers	Wastewater Customers	Drainage Customers
Residential	57,733	57,721	57,368
Multi-Unit Residential	826	826	802
Commercial	3,102	2,983	3,174
Summer Service	195	24	-
Total	61,856	61,554	61,344
Within City Limits	61,714	61,516	61,344
Outside City Limits	142	38	-
Total	61,856	61,554	61,344

Water Customers

Size of Connection	Residential	Multi-Unit Residential	Commercial	Summer Service	Total
15 mm - 5/8"	54,973	27	1,173	7	56,180
18 mm - 3/4"	2,624	226	1,084	22	3,956
25 mm - 1"	127	362	383	28	900
40 mm - 1.5"	9	106	150	42	307
50 mm - 2"	-	49	174	84	307
75 mm - 3"	-	56	116	8	180
100 mm - 4"	-	-	15	4	19
150 mm - 6"	-	-	5	-	5
200 mm - 8"	-	-	2	-	2
Total	57,733	826	3,102	195	61,856

Wastewater Customers

Size of Connection	Residential	Multi-Unit Residential	Commercial	Summer Service	Total
15 mm - 5/8"	54,973	27	1,165	3	56,168
18 mm - 3/4"	2,613	226	1,041	2	3,882
25 mm - 1"	127	362	365	4	858
40 mm - 1.5"	8	106	141	6	261
50 mm - 2"	-	49	141	7	197
75 mm - 3"	-	56	112	2	170
100 mm - 4"	-	-	11	-	11
150 mm - 6"	-	-	5	-	5
200 mm - 8"	-	-	2	-	2
Total	57,721	826	2,983	24	61,554

Drainage Customers

Area of Property	Residential	Multi Residential	Commercial	Number of Properties
0 to 1,000 m^2	57,366	379	1,329	59,074
1,001 to 3,000 m^2	-	303	811	1,114
3,001 to 5,000 m^2	-	44	321	365
5,001 to 7,000 m^2	1	29	162	192
7,001 to 9,000 m^2	-	11	109	120
9,001 to 11,000 m^2	-	9	74	83
11,001 to 13,000 m^2	1	8	55	64
13,001 to 15,000 m^2	-	5	53	58
15,001 to 17,000 m^2	-	1	43	44
17,001 to 19,000 m^2	-	3	25	28
19,001 to 21,000 m^2	-	5	32	37
21,001 to 23,000 m^2	-	2	17	19
23,001 to 25,000 m^2	-	1	13	14
25,001 to 27,000 m^2	-	1	9	10
27,001 to 29,000 m^2	-	-	11	11
29,001 to 31,000 m^2	-	-	6	6
Over 31,000 m^2	-	1	104	105
Total Properties	57,368	802	3,174	61,344

Utility Rate History and Comparisons

The following tables detail the history of utility rates since 1992, and the annual cost and annual cost increase for a sample residential customer with 360 cubic metres of water consumption a year.

Year	Consumption in Fixed Charge (Cubic Metres)	Fixed Annual Charge	Volume Charge (Per Cubic Metre)	Cost for Sample Customer	
				Annual Charge (360 m^3)	Per Cent Increase
1992	28.3	98.40	0.593	211.20	5.2%
1993	28.3	106.20	0.643	228.48	8.2%
1994	28.3	115.20	0.693	247.02	8.1%
1995	28.3	121.20	0.728	259.68	5.1%
1996	25.0	125.10	0.740	280.50	8.0%
1997	22.0	131.40	0.750	302.40	7.8%
1998	19.0	138.00	0.750	322.50	6.6%
1999	16.0	138.00	0.750	336.00	4.2%
2000	13.0	138.00	0.750	349.50	4.0%
2001	10.0	138.00	0.750	363.00	3.9%
2002	none	105.00	0.770	382.20	5.3%
2003	none	109.50	0.790	393.90	3.1%
2004	none	117.00	0.810	408.60	3.7%
2005	none	123.00	0.830	421.80	3.2%
2006	none	129.00	0.850	435.00	3.1%
2007	none	135.05	0.880	451.85	3.9%
2008	none	146.00	0.960	491.60	8.8%
2009	**none**	**160.00**	**1.050**	**538.00**	**9.3%**

Wastewater Rate History

Year	Consumption in Fixed Charge (Cubic Metres)	Fixed Charge	Volume Charge (Per Cubic Metre)	Cost for Sample Customer	
				Annual Charge (360 m^3)	Per Cent Increase
1992	28.3	94.80	0.601	169.44	13.6%
1993	28.3	102.60	0.650	183.36	8.2%
1994	28.3	111.00	0.700	197.94	8.0%
1995	28.3	114.60	0.721	204.18	3.2%
1996	25.0	105.00	0.690	204.36	0.1%
1997	22.0	105.90	0.660	212.82	4.1%
1998	19.0	106.50	0.630	219.90	3.3%
1999	16.0	106.50	0.630	231.24	5.2%
2000	13.0	106.50	0.630	242.58	4.9%
2001	10.0	106.50	0.630	253.92	4.7%
2002	none	76.50	0.650	268.38	5.7%
2003	none	81.00	0.670	278.78	3.9%
2004	none	87.00	0.690	290.69	4.3%
2005	none	93.00	0.720	305.54	5.1%
2006	none	99.00	0.750	320.40	4.9%
2007	none	102.20	0.780	332.46	3.8%
2008	none	116.80	0.850	364.07	9.5%
2009	**none**	**124.10**	**0.930**	**398.64**	**9.5%**

Drainage Infrastructure Levy Rate History

Year	Property Category	Annual Levy	Percentage Increase
1992	All	24.00	n/a
1993	All	30.00	25.0%
1994	All	36.00	20.0%
1995	All	42.00	16.7%
1996	1,000 square metres or less	42.00	-
1997	1,000 square metres or less	43.20	2.9%
1998	1,000 square metres or less	44.40	2.8%
1999	1,000 square metres or less	45.60	2.7%
2000	1,000 square metres or less	46.80	2.6%
2001	1,000 square metres or less	48.00	2.6%
2002	1,000 square metres or less	49.20	2.5%
2003	1,000 square metres or less	60.00	22.0%
2004	1,000 square metres or less	72.00	20.0%
2005	1,000 square metres or less	78.00	8.3%
2006	1,000 square metres or less	84.00	7.7%
2007	1,000 square metres or less	91.25	8.6%
2008	1,000 square metres or less	98.55	8.0%
2009	**1,000 square metres or less**	**105.85**	**7.4%**

Rate Comparison - Sample Residential Customer

The following chart compares the 2009 rates for Regina and other cities for a sample residential customer. The sample customer is a home owner who uses 360 m^3 of water per year. The water consumption is typical for a family of two adults and two children, in a home with two bathrooms, a dishwasher and washing machine, on a lot with typical landscaping for Regina.

Sample Residential Customer - 2009 Rates

Utility Bill Details	Regina	Calgary	Edmonton	Saskatoon	Winnipeg
Water:					
Basic Charge	**$ 160.60**	$ 139.92	$ 65.04	$ 72.00	$ 55.00
Volume Charge	**378.00**	451.44	553.03	273.33	451.31
Total Water	**538.60**	591.36	618.07	345.33	506.31
Wastewater:					
Basic Charge	**124.10**	123.13	67.68	72.00	-
Volume Charge	**274.54**	227.81	387.61	169.08	668.71
Total Wastewater	**398.64**	350.94	455.29	241.08	668.71
Drainage or Infrastructure Levy	**105.85**	88.82	111.79	105.37	-
Total Annual Utility Charges	**$ 1,043.09**	$ 1,031.12	$ 1,185.15	$ 691.78	$ 1,175.02

Rate Comparison - Sample Commercial Customer

The following chart compares the 2009 rates for Regina and other cities for a sample commercial customer. The commercial customer has a 40 mm meter, uses 3,000 cubic metres of water per year, with a property size in the range of 3,001 to 5,000 m^2. This water consumption would be typical for a strip-mall with a restaurant and a hair salon with a parking lot and minimal landscaping.

Sample Commercial Customer - 2009 Rates

Utility Bill Details	Regina	Calgary	Edmonton	Saskatoon	Winnipeg
Water:					
Basic Charge	**$ 288.35**	$ 351.96	$ 198.00	$ 960.00	$ 85.80
Volume Charge	**3,150.00**	2,673.00	2,829.66	1,709.57	3,330.86
Total Water	**3,438.35**	3,024.96	3,027.66	2,669.57	3,416.66
Wastewater:					
Basic Charge	**222.65**	115.68	62.64	960.00	-
Volume Charge	**2,790.00**	1,892.10	2,990.70	1,557.38	5,424.33
Total Wastewater	**3,012.65**	2,007.78	3,053.34	2,517.38	5,424.33
Drainage or Infrastructure Levy	**423.40**	83.40	983.40	753.00	-
Total Annual Utility Charges	**$ 6,874.40**	$ 5,116.14	$ 7,064.40	$ 5,939.95	$ 8,840.99

Water

Initiatives for 2009

- Begin accuracy testing of intermediate sized water meters. Complete repairs or replace meters that do not meet accuracy criteria. Evaluate results for possible revisions to the 2010 program.
- Complete a review of the current Water Bylaw and make recommendations for revisions as necessary.
- Undertake consultant selection and proceed with pre-design work for the Buffalo Pound Water Treatment Plant process upgrades.
- Complete design and tender of swab retrieval structure for the Buffalo Pound Supply Line. This initiative will permit swabbing of the 1,050 mm diameter pipeline and improve operational efficiency and safety for swabbing of the 900 mm diameter pipeline.
- Remove check valve at the Keystown Booster Station. This is part of the eventual decommissioning of the Keystown Booster Station and will eliminate the need for future maintenance of the valve and associated concrete vault. It will also facilitate easier swabbing of the 900 mm diameter Buffalo Pound Supply Line.
- Review Albert Street Reservoir Inspection Report and proceed with the development of a plan to address rehabilitation of the roof structure.
- Review report and recommendations from the 2008 engineering study evaluating how to provide adequate flows and pressures to existing areas and future growth areas on the north side of the city. Evaluate and recommend a plan to incorporate upgrades to the water distribution system to address these concerns.
- Replace watermains, fire hydrants, valves and service lines in conjunction with roadway improvements.
- Identify and develop short, medium and long-term strategic plans and initiatives for upgrades to the water system.
- Initiate fieldwork and data collection for assessment of the behaviour of asbestos cement (AC) watermains in expansive soils. This work is being done in collaboration with the National Research Council's Centre for Sustainable Infrastructure Research in Regina and the University of Regina.

Status of 2008 Initiatives

- Major water main extensions were constructed to provide water services to Harbour Landing in the southwest and the Creeks in the southeast.
- Decommissioned wells that were no longer required due to increased supply capacity from the Buffalo Pound Water Treatment Plant. Newer wells in good condition are being kept for emergency water supply.
- Conducted an engineering study to evaluate the water distribution system and prepared recommendations for determining how to provide adequate flows and pressures to existing areas and future growth areas on the north side of the city. The study will be finalized in early 2009.

- Replaced watermains, fire hydrants, valves and service lines in conjunction with roadway improvements.

- Design and tendering for improvements to the Buffalo Pound supply line were undertaken. The contract for the check valve removal at the Keystown Booster Station was awarded with completion of work scheduled in 2009. Initiated design and purchased materials for the swab retrieval structure.

Water System Overview

The water supply, pumping and distribution system provides water for residential and commercial use and fire protection. The system serves a population of approximately 200,000 including all residents and businesses in the city limits and a number of customers outside the city. Service goals include:

- Providing water that meets or exceeds Provincial water quality standards and objectives.

- Providing water at adequate pressure and in sufficient quantity to satisfy the requirements for domestic and commercial use, irrigation and fire protection.

- Identifying and implementing improvements to the water system through long range planning, monitoring, improved operation, capital works and new technology.

- Participation in Communities of Tomorrow and National Research Council's Centre for Sustainable Infrastructure Research to develop new technologies and improve practices.

Components of the water system shown in the map on page 25 include:

- **Buffalo Pound Lake and Wells** – All of the annual water needs are provided from Buffalo Pound Lake. There are wells available for backup purposes. The well water is chlorinated, but does not require further treatment to meet current health standards.

- **Buffalo Pound Water Treatment Plant** – Water from Buffalo Pound Lake is drawn from the lake and pumped three kilometres to the Buffalo Pound Water Treatment Plant, a facility owned jointly with the City of Moose Jaw. At the plant, the water is mixed with coagulants that cause algae, bacteria and other impurities to clump together so that they settle out of the water. The water is then filtered and chlorinated. During warmer weather, the water is passed through granular activated carbon to improve the taste and odour.

- **Supply Pipelines** – From the Buffalo Pound Water Treatment Plant, the water is pumped through a 56 km pipeline to the City's water distribution system. The pipeline has been twinned to provide increased capacity and reliability of the water supply. A number of other supply pipelines transport water from wells to reservoirs.

- **Reservoirs** – Five storage reservoirs are used to store water to meet peak demands and ensure that there is an adequate supply of water available for firefighting. The reservoirs have a combined usable storage capacity equal to about one and one-half days of average water use.

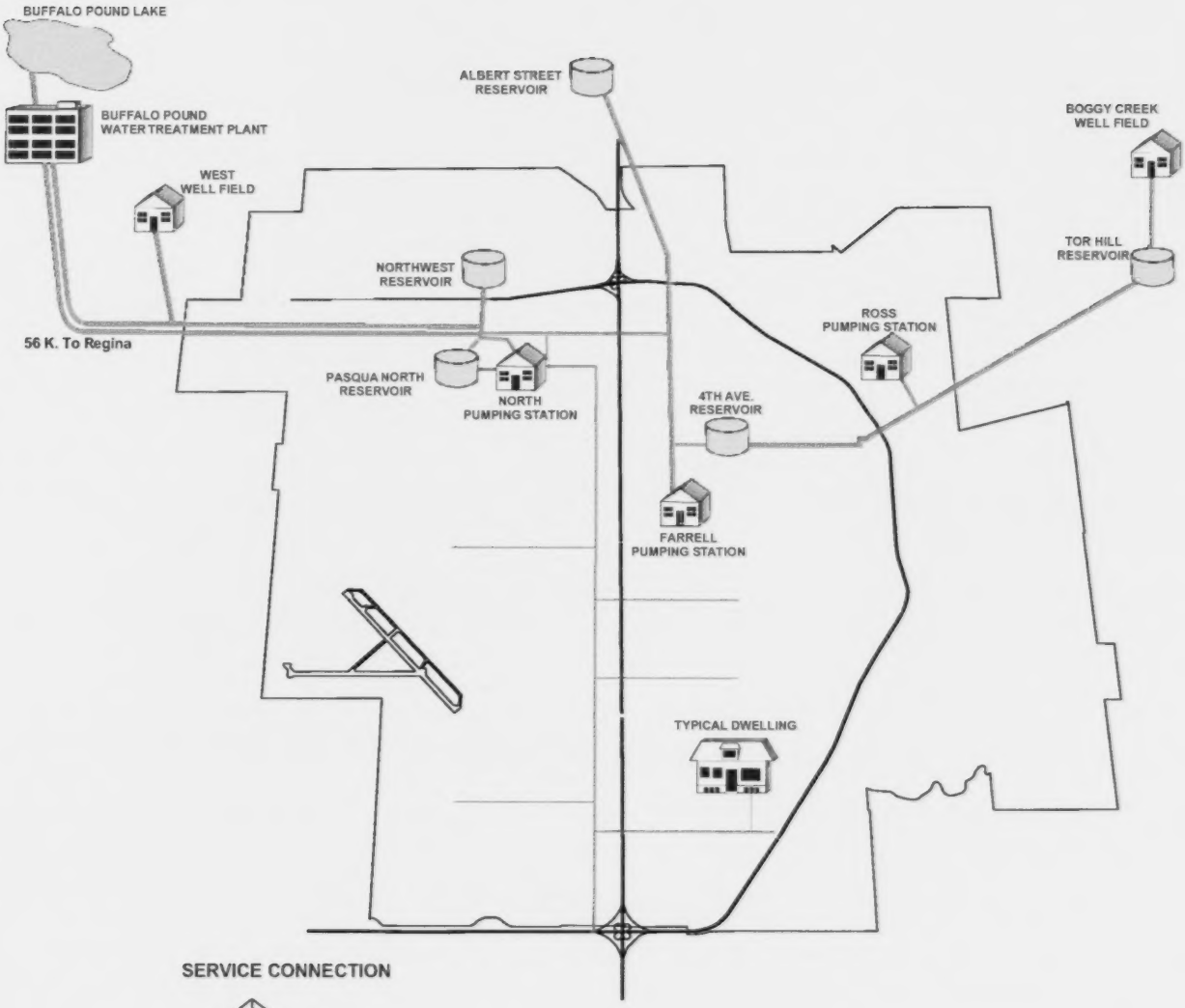
- **Pumping Stations** – There are three pumping stations (North, Farrell and Ross) that are used to pump water from reservoirs into the distribution system as necessary.

- **Distribution System** – The distribution system consists of over 790 kilometres of pipelines ranging in size from large 1,067 mm diameter trunk mains to 100 mm distribution pipes. The pipelines are made of various materials – asbestos cement, coated steel and polyvinyl chloride (PVC). The distribution system also includes over 6,000 valves that allow the water to be turned off to facilitate repairs and maintenance.

- **Service Connections** – Distribution pipes are connected to a customer's water line through a service connection.

- **Water Meters** – Water meters measure water consumption. A water meter replacement program was completed in 2004. The project included the installation of automated meter reading (AMR) equipment to transmit meter readings to a mobile data collection unit.

WATER SYSTEM



1. Service Connection (Curb Box)
2. Watermain

Water System Objectives

The Long Term Water Utility Study, initially completed in 1993, covered all aspects of the water system, including projected future water requirements, the condition of the existing system components, and a review of the system operations. The Study was adopted by City Council as the city's long term water supply plan. In 1998, a portion of the Study was updated and resulted in a decision to improve the Buffalo Pound supply pipeline and pumping system rather than construct a ground water treatment plant. A Study update was completed in 2006 and provided recommendations for water system improvements for the next 20 years.

As part of the Study, a number of objectives were established. These objectives continue to guide the water system operations today, and include:

- **Water Quality** – The City adopted the *Guidelines for Canadian Drinking Water Quality, 4th Edition* published by Health Canada as the basis for its water quality objectives. These are the most complete guidelines established in Canada. The standards, adopted by Saskatchewan Environment, regulate the operation of all waterworks in Saskatchewan.

  For parameters not included in the *Guidelines*, the City has adopted the most stringent level listed by other authorities. Some parameters are for substances for which there are aesthetic concerns rather than health concerns, such as iron, manganese and hardness. Other parameters are for substances to which health concerns have been linked but not proven, such as aluminum and trihalomethanes.

- **Water Conservation** – An enhanced Water Conservation Program was initiated in 1991 to reduce the per capita water consumption and the short term peak water demand. Reduction of water demand was recognized as a strategic means for postponing capital expenditures for the expansion of both water and wastewater treatment facilities. Targets for reduction of average day and peak day water consumption (as compared to the projections in 1992 for specific future years) were a 5% reduction by 1996, a 10% reduction by 2001 and a further 15% reduction by 2011. These targets were confirmed in the Long Term Water Utility Study updated in 2006.

  Water consumption figures indicate that since 1991, average water consumption has decreased 10% while the population has increased approximately 5%. The reduction for average day and peak day per capita water use (as compared to 1991) is 10% and 25% respectively.

- **Reliability** – The City established an objective for the reliability of delivery, defined as ensuring the water will be available within the limits of minimal local disruptions for system maintenance and rare large-scale disruptions due to unforeseen catastrophe. Specific objectives are:

  - Mandatory water rationing should occur less than one year in ten.
  - Service should be restored within 24 hours in the event of local service disruptions such as water main breaks and connection problems. This objective is achieved for 99% of incidents.
  - All reasonable steps should be taken to ensure that large-scale disruptions do not occur. These steps include ensuring that there is sufficient redundancy in the system so that alternate facilities can be used in the event of a failure in part of the system.
  - Alternate power sources must be available in the event of a main power failure.
  - Hydrants should be installed and maintained to meet the requirements of the National Fire Code.

- **Water Pressure** – Water must be delivered to customers under pressure. It is desirable to maintain pressure standards between a minimum and maximum range. The pressure under which water is delivered to a customer depends upon many factors, including the consumption by other customers, pumping capabilities, pipe size, velocity of the water through the system, and the design of the water system.

  Water pressure can be controlled to a certain extent through the operation of pumps and other components of the system. However in some instances, system changes may be necessary to meet pressure standards.

  As part of the Long Term Water Utility Study, desirable ranges for pressure and velocity were identified and system improvements were recommended where conditions fell outside of these ranges. The Long Term Water Utility Study Update includes recommendations for addressing lower pressures along the northern edge of the City.

- **Efficiency of Operations** – Electricity used in pumping water is a significant cost within the Water Supply, Pumping and Distribution budget. This cost is a factor of the efficiency of the pumps as well as the hydraulics of the system. Pumping operations are regularly reviewed to identify where system improvements or operational changes could reduce electrical costs. Changes are pursued when cost-effective.

Water Supply

Buffalo Pound Lake now provides 100% of Regina's water needs. The water is treated at the Buffalo Pound Water Treatment Plant, which is jointly owned by the Cities of Regina and Moose Jaw. It was built in the 1950s in order to provide water for those two cities. The facilities are administered by the Buffalo Pound Water Administration Board, which consists of two members appointed by the City of Regina and one member appointed by the City of Moose Jaw.

Although the plant is operated as a separate entity, there is a high degree of communication and cooperation between the plant operators and the two cities.

On an annual basis, the Board establishes a general water rate. The rate is established on a cost-recovery basis. The 2009 rate has been set at $194.08 for one million litres, a 9% increase over the 2008 rate. The increase is due primarily to rising costs for electricity, increases in unit prices for treatment chemicals, equipment price increases, and increases for wages and benefits.

Since Buffalo Pound Lake is shallow and prone to the growth of algae and other organic materials, treatment of the lake water is challenging. Over the last ten years, the lake water has required higher levels of treatment to provide water that meets the City's water quality objectives.

The City's estimated 2009 cost of water purchased from Buffalo Pound will total approximately $6.0 million, or about 40% of the total costs of the Water Supply, Pumping and Distribution Program, or about 13% of total utility costs.

Future planning for the plant must address new and anticipated regulations related to health effects. The review and update of the City's Long Term Water Utility Plan includes a study of the Buffalo Pound Water Treatment Plant. Results of the study include:

- Disinfection – The plant uses chlorine for treatment and disinfection. Chlorinating naturally occurring organic material results in the formation of disinfection by-products known as trihalomethanes and heloacetic acids which are harmful to human heath. While Regina's water meets the requirements for total trihalomethanes, the concentration of one trihalomethane slightly exceeds the Health Canada Guideline for part of the year. The study recommends reducing the use of chlorine if possible in

conjunction with the addition of ultraviolet light disinfection which is effective in reducing risks associated with cryptosporidium.

- Taste and Odour Control – The plant uses granular activated carbon and powdered activated carbon to control taste and odour generated by algae in Buffalo Pound Lake. The percentage of time that taste and odour control is required has been increasing for a number of years. The Study discusses the performance of a detailed analysis of additional contactors versus additional storage for granular activated carbon but recommended a third screw pump and four additional contactors.

- Wastewater Residuals Management – The treatment processes remove particulate matter along with approximately 6% of the total water volume from the lake water. This wastewater must then be treated and disposed to the environment. The existing wastewater lagoons are overloaded. Use of the Recycle Facilities installed in 1985 was terminated in the 1990's due to cryptosporidium concerns. Recycling could be restored soon after UV disinfection is implemented.

- Water Stability – Treated water is slightly corrosive which leads to the softening of concrete tanks in the water treatment plant and the slow deterioration of piping and fittings in the water distribution system which contains metal. Corrosion control in the form of protective coatings for concrete tanks and pH adjustment of treated water is recommended in the Study.

A Waterworks System Assessment (WSA) was completed for the Buffalo Pound Water Treatment Plant and Regina's Water System in 2005. WSA's are required every five years in accordance with Saskatchewan Environment's 2002 Water Regulations. The WSA evaluates current performance, level of optimization, functionality, capability, efficiency and sustainability of the waterworks and identifies required improvements.

As part of the total water purchase costs the two cities also contribute an amount equal to 10% of the general water charges to a Capital Replacement Reserve used to pay for replacement and upgrading of equipment in the plant.

Costs for major improvements to the plant are shared with the City of Moose Jaw. The cost-sharing ratio is determined by the percentage ownership of each City, which at the present time is approximately 73% for Regina and 27% for Moose Jaw.

Water Purchase Statistics	2004	2005	2006	2007	2008
Purchases (mega litres)	27,021	26,799	28,138	28,534	27,868
General Rate ($/mega litre)	150.87	154.81	158.59	169.47	177.98
Annual cost of water ($'000's)	4,076.7	4,148.8	4,462.4	4,835.7	4,959.9
Capital Replacement Program (10% of General Rates) ($/mega litre)	15.09	15.48	15.86	16.95	17.80
Power ($/kwh)	0.05748	0.05400	0.05751	0.06067	0.06370
Power (kwh) (000's)	4,939.3	4,895.7	5,948.6	3,071.0	2,783.0

Regina can also draw water from 9 wells located in and around the city. Wells currently are available for emergency water supply in the event of a failure in the Buffalo Pound Water Supply, however, the amount available from the wells is less than the city's typical daily needs.

The well water meets current safety standards but has levels of iron, manganese and hardness that exceed the city's water quality objectives. These minerals can cause staining on fixtures, as well as the appearance of "discoloured" water. The minerals also cause problems by forming deposits in the water system, requiring more frequent maintenance.

A number of tests are carried out to ensure that the water meets the water quality objectives. Tests include:

- Water quality at the Buffalo Pound Water Treatment Plant is extensively monitored. On-line analyzers are used to monitor the major parameters. The water is monitored every second of every day after every treatment stage. Laboratory staff perform over 25,000 analyses per year monitoring 65 different water quality parameters. The cost of these procedures is included in the general water rate for water purchased from Buffalo Pound.

- Tests are also carried out at various points in the City's water supply and distribution system. Regular sampling and testing is done in order to comply with provincial requirements for the operation of the water system, as well as to ensure the City's water quality objectives are met.

Test results show that the water supply meets all health and safety guidelines.

In addition to carrying out testing of treated water, steps are taken to safeguard the water supply. Identification and prevention of possible sources of groundwater contamination is an ongoing process. Saskatchewan Watershed Authority in conjunction with stakeholders completed a Source Water Protection Plan for the Upper Qu'Appelle and Wascana Creek watersheds in 2008.

Water Pumping

Three pumping stations are used to pump water from reservoirs into the distribution system. The operation of all stations must be coordinated along with supplies from Buffalo Pound and other components of the supply system such as the reservoirs. Since electrical costs are a major component of this operation, it is important that the pumps are operated in an efficient manner. Water pumping must also be provided when electrical power failures occur.

In order to coordinate the operation of each station and to operate the pumps in an efficient and reliable manner, system data is required. This information is obtained from a computerized Supervisory Control and Data Acquisition (SCADA) system.

Water Distribution

The water distribution system consists of buried pipelines made of cast iron, asbestos cement (AC), or polyvinyl chloride (PVC). Steel is used for large supply mains exceeding 500 mm in diameter. Cast iron pipe was installed from 1904 until the 1940s. Asbestos cement was used throughout the 1950s, '60s and '70s. AC and PVC pipe comprise 70% and 30% respectively of the 790 kilometre distribution system. Approximately 107 kilometres of cast iron pipe has been replaced with PVC pipe since 1980. Some cast iron pipe remains due to location and size considerations (intersections, 600 mm diameter and over) and will be replaced as the need and opportunity arises. PVC pipe repair costs are virtually nil. The replacement of cast iron pipe with PVC pipe has allowed for significant savings in maintenance repairs.

Watermain breaks are a primary cause of water service disruptions, water losses and discoloured water. The frequency of breaks is a function of the pipe materials. The distribution of each material in the system and its failure rate is as follows:

Type of Pipe	Length in Kilometres (2006)	Percentage of Total	Failure Rate
Cast Iron	2	0.2	1.8
Asbestos Cement	535	67.9	0.2
PVC	215	27.2	-
Steel	37	4.7	-
Total	789	100.0	0.2

Note:
The failure rate is calculated as the number of breaks per kilometre of pipe per year. The failure rate for cast iron pipe is the average failure rate for the years 1980 through 2001.

Watermain Statistics	2004	2005	2006	2007	2008
Main Leaks Repaired (#)	98	65	183	206	179
Average Unit Repair Cost ($)	7,311	8,705	6,418	7,415	10,012

Note:
The variance in the average unit cost in some years is the result of more locations requiring pipe replacements rather than clamp repairs.

Full circle stainless steel repair clamps can be used to repair small holes and cracks. Larger breaks are more costly to repair, as the damaged section of the main must be removed and new pipe installed. Both types of repairs require the water to be shut off to that section of the main. Customers are notified of the disruption in service.

A new watermain flushing process was successfully applied to the distribution system starting in 1998. The process has proven to be considerably more effective in removing iron deposits. The process involves closing valves to ensure the water flowing to the one isolated hydrant is coming from only one direction. This uni-directional flushing process increases the flow velocity to the point where all removable iron deposits are flushed from the pipes. Although uni-directional flushing cost is greater on a unit cost basis, it can be applied less frequently.

The existing water distribution system has a number of "dead ends", which cause problems in the operation of the system. In order to maintain uniform pressures in the system, ensure high water quality, and provide adequate flow to fire hydrants, dead ends should be avoided. Where possible, the watermains should be "looped", or connected to another line. This is possible in fully developed areas where there are other lines with which to connect. However, it is not practical to do this in areas on the edge of the city or in cul-de-sac's. The City has an ongoing capital program that addresses the reduction of the number of dead ends, thereby increasing the security of the overall system.

The water distribution system includes over 6,000 valves. The valves should be in working order to shut off the water for repair and when flushing watermains. The valves are checked periodically and repaired or replaced as necessary. In many cases, the valve is functioning properly, but the casing surrounding the rod used to turn the valve is damaged or filled with dirt. A new method of excavation, called hydro-excavation, uses high pressure water and vacuum to loosen and remove soil for repair access. The method is quicker and leaves a smaller excavation. Traditional excavation methods are applied where the entire valve requires replacement.

Watermain Valve Statistics	2004	2005	2006	2007	2008
Valves Replaced (#)	20	28	24	24	39
Unit Replacement Cost ($)	5,833	5,902	6,416	9,559	6,878
Valves Repaired (#)	83	78	67	90	81
Unit Repair Cost ($)	1,359	1,429	1,760	1,182	2,062

The City operates a system of fire hydrants in order to provide water for firefighting purposes. The National Fire Code sets out standards for fire hydrants, and indicates that regular maintenance is required. The City uses *Water Supply for Public Protection – A Guide to Recommended Practice (1981)* published by the Fire Underwriters Survey as its standards for fire hydrant inspection and maintenance. These standards include checking hydrants on a regular basis to ensure they are functioning properly and available for use in the event of a fire; repairing and replacing any malfunctioning hydrants; repainting each hydrant every five years; and installing hydrants in new areas to ensure a hydrant is available within the specified distance of all buildings. The parts from damaged or obsolete hydrants taken out of service are salvaged and reused whenever possible.

Hydrant Statistics	2004	2005	2006	2007	2008
Hydrants in Service (#)	3,949	3,991	4,003	4,058	4,125
Hydrant Replacements (#)	11	15	9	14	18
Unit Replacement Cost ($)	8,356	9,271	9,565	11,499	11,115

The unit cost is for an emergency replacement, and does not include the cost of a hydrant lead pipe, or temporary water supply to customers while the water is turned off.

Work done on service connections range from minor repairs at the curb box, to the repair or replacement of the entire service connection. Water must be turned on and turned off at the customer site for reasons such as transfer of ownership of a home, new customers, breaks in waterlines on the customer's property and unpaid accounts. The water is turned on and off by turning a rod attached to the valve beneath the soil surface. At times, these rods and valves (curb boxes) may first have to be repaired. One 24-hour emergency service crew handles water leaks, complaints and other trouble calls.

Service Connection Statistics	2004	2005	2006	2007	2008
Connection Leak Repairs (#)	385	267	374	354	301
Unit Repair Cost ($)	3,708	3,599	3,499	5,128	5,448
Curb Box Repairs (#)	627	669	604	660	617
Unit Repair Cost ($)	824	907	1,008	1,087	1,199

The City implemented Automated Meter Reading (AMR) in 2003 and 2004, with all meters replaced by the contractor engaged for the project. Customer complaints or meter readers identify problems with water meters. The problems are typically investigated in the field by meter shop staff. New meters are installed to replace malfunctioning meters, as well as for new customer sites. Meter interface units are installed on all meters so that readings can be obtained with the AMR system.

Meter Installation and Repair Statistics	2004	2005	2006	2007	2008
Meters in Service (#)	60,158	60,731	61,500	62,008	62,815
Meters Installed - City (#)	813	710	903	1,023	967
Meters Installed - Contractor	18,800	-	-	-	-
AMR Units Installed - Contractor	20,800	-	-	-	-
Meters Overhauled (#)	601	560	421	1,029	420
Service Calls (#)	6,162	5,292	5,157	4,448	4,944

Water Consumption

The 2009 budget is based on an estimate of billable water consumption of almost 24 million cubic metres. About 62% of the consumption (14.8 million cubic metres) is for residential properties, 11% (2.5 million cubic metres) for multi-residential properties, and 27% (6.5 million cubic metres) is for non-residential properties.

The City has had a Water Conservation Program since 1985 and initiated an enhanced program in 1991. The primary goals of the program are to reduce the average per capita water consumption and the peak day water use. The following table provides information on the total water supplied and water use.

Water Supply and Use	2004	2005	2006	2007	2008
Total Water Supplied (mega litres)	27,021	26,799	28,158	28,534	27,956
Average Water Use per capita per day (litres)	395	377	400	393	381
Winter Water Use per capita per day (litres)	367	350	371	348	345
Summer Water Use per capita per day (litres)	435	414	487	458	434
Peak Day Water Use (mega litres)	121	128	127	137	122

The Water Conservation Program continues to be successful. The average water consumption has been reduced by approximately 10.2% since 1991. The population of the City has increased by approximately 10% over the same period. Annual water consumption has decreased from a high of 35 million cubic metres in 1988 to an average of 24 million cubic metres since 1993. The following table provides the history of metered water consumption.

Metered Water Consumption

(Million Cubic Metres)

Year	Metered Water Consumption	Year	Metered Water Consumption
1993	23.9	2001	24.3
1994	23.1	2002	24.0
1995	23.4	2003	25.0
1996	24.9	2004	22.4
1997	25.5	2005	21.8
1998	24.4	2006	23.1
1999	23.9	2007	23.7
2000	23.3	2008	22.7

Note:
Water from Buffalo Pound is measured in mega litres (millions of litres). Water consumption for customers is measured in cubic metres.

Water Quality Monitoring

Water quality monitoring activities include:

- Administering the Permit to Operate Water Works for operation of the water system, including water quality monitoring of all water sources and the distribution system, and maintaining records related to the safety and operation of the water system.
- Carrying out supplemental testing to gather water quality data from the water distribution system.
- Communicating information about water quality to the public.
- Efforts to protect the City's water source at Buffalo Pound Lake and the Regina area aquifers.

Water Loss Reduction

All water utilities experience a certain amount of water loss. Water loss is the sum of water leaks plus water usage that is not metered and thus not billed to a customer. Water used to suppress fires and some irrigation are examples of water use that is not metered. Water lost through watermain breaks is an example of leakage and is part of the "unavoidable real losses" from the water distribution system.

In 2006, the City of Regina changed the method for reporting water loss. The International Water Association (IWA) Water Loss Task Force has produced an international best practice standard approach for water balance calculations and the estimation of water loss. This best practice has also been adopted by the American Water Works Association (AWWA) and by the Federation of Canadian Municipalities (FCM) InfraGuide Best Practice "Water Use and Loss in Water Distribution Systems".

The international best practice performance measure advocated by the IWA and AWWA is the Infrastructure Leakage Index (ILI). The ILI is defined as the ratio of Current Annual Real Losses (Real Losses defined as physical water losses from the pressurized system up to the point of customer consumption) to the Unavoidable Annual Real Losses (UARL defined as a theoretical reference value representing the technical low limit of leakage that could be achieved if all of today's best technology could be successfully applied). The ILI is a highly effective performance measure because it is:

- Based on a calculation that has been tested globally;
- Unit-less and based on real water loss;
- System specific taking into account operating pressure, service connection length, pipe condition and water meter location; and
- Comparable to an international data set.

To date, 27 municipalities in Canada that are participating in water system benchmarking have or are undertaking this method of determining an (ILI) index for their water distribution systems. The ILI is a highly effective performance indicator for comparing (benchmarking) the performance of utilities in operational management of real losses.

The 2008 calculated ILI of 2.96 for the City of Regina in within the "Good" Technical Performance Range of 2.0 to 4.0, but there is potential for marked improvements. For comparison purposes an ILI index of 1.0 to 2.0 is within the "Excellent" Technical Performance Range and indicates that further water loss reduction, although possible, may be uneconomical.

A Leakage Management Project was initiated in 2005 in Regina in cooperation with the National Research Council. The final report on the project is expected for release in the spring of 2009.

Water Volumes (million cubic metres)	2004	2005	2006	2007	2008
Total Water Supplied	27.0	26.8	28.1	28.5	28.0
Billed Consumption	22.4	21.8	23.5	23.7	23.7
Unaccounted Water	4.6	5.0	5.0	4.8	4.3
Unaccounted Water as a Per Cent of Total Water Supplied (%)	17.00	18.66	17.79	17.14	15.36
Infrastructure Leakage Index	-	2.97	2.35	3.04	2.96

Water Conservation Program

The Water Conservation Program consists of identifying information that should be provided to the public on methods of conserving water, and communicating the information by means such as:

- Brochures.
- Web page information.
- Appearances on local television and radio shows.
- School visits.
- Appearances at local trade shows, such as the Home and Garden Show.
- Xeriscape landscaping workshops.

Water conservation efforts have been effective to date. As part of the Long Term Water Utility Study, water consumption was predicted both with and without the impacts of a Water Conservation Program. The next table shows the impact of conservation efforts has been more successful than predicted.

Water Consumption	Study Predictions for 2001 with Water Conservation	Study Predictions for 2001 without Water Conservation	2008
Annual Average Per Capita[1] (litres per capita per day)	513	564	381
Annual Average Day (million litres)	98	109	76
Peak Day (million litres)	244	271	122
Peak 3-Day (million litres per day)	191	212	120
Population Estimates	200,408	200,408	200,790

Note:
Per capita water consumption is the entire volume of water used by all customers, including industrial and commercial, divided by the population.

A portion of the decrease can be attributed to factors such as reduced industrial water use, revised population figures, increases in water rates and weather conditions. However, water conservation is a significant factor.

Cross Connection Control and Backflow Prevention Program

Water quality can be compromised by the introduction of contaminants into the distribution system. This can occur wherever there is a cross connection, which is a link between the drinking water supply and the source of contamination such as a pesticide container on a garden hose or a boiler filled with anti-corrosion chemicals. Various conditions can cause backsiphonage and/or backpressure in the water supply system. This can cause the domestic water to move in the opposite direction and take with it any materials it is in contact with or mixed with. The result is the water supply to a building or neighbourhood becomes polluted or contaminated.

The Cross Connection Control and Backflow Prevention Program was established in 1996 to reduce the possibility of contamination from such causes. Since the program was established, all new facilities have been reviewed for backflow prevention requirements through the building permit process. The 3,000 existing commercial, institutional and industrial facilities are being inspected by the City. Any backflow requirements are identified and a one-year time frame given to become compliant.

The four primary components of the program are:

- Public education and awareness.
- Inspections of 3,000 commercial, industrial and institutional facilities.
- Administration of the annual testing of testable backflow prevention assemblies.
- Review of appropriate building permits for new facilities.

Cross Connection Control and Backflow Prevention Statistics	Program Inception to December, 2008
Existing Facilities Inspected	2,001
New Facilities (Building Permits)	960
Existing Facilities Inspected and Compliant	1,496
Existing Facilities Inspected and Non-Compliant in the Current Year	6
Existing Facilities Inspected and Still Non-Compliant after One Year	1,231
Testers Licensed	40

Wastewater

Initiatives for 2009

- Engineering pre-design work will start in 2009 for the wastewater treatment plant upgrade/expansion project. This work is carried over from 2008.
- Convert wastewater treatment plant engineering drawings into digital format. This work is carried over from 2008.
- Provide an engineering pre-design, detailed design and tendering for a fully renewed wastewater screening system, odour control and flow security at the McCarthy Boulevard Pumping Station. This project incorporates integrity improvements including valving, instrumentation, controls, and auxiliary equipment improvements.
- Implement an automated tracking and billing system for liquid waste haulers utilizing the McCarthy Boulevard Pumping Station receiving station.
- Inspect and refurbish critical areas of the concrete 54" diameter forcemain delivering wastewater to the primary treatment facility.
- Renew sedimentation tank bridge collector wheels and controllers.
- The City initiated a Northeast Sector Study, which will provide sector level detail for the serviceability of Ross Industrial Park
- Complete a serviceability study on the wastewater treatment plant UV disinfection facility equipment.
- Initiate planning and pre-design of a new maintenance building at the wastewater treatment plant. This work is carried over from 2008.
- Contractors will be hired in 2009 to perform renewal/replacement requirements for the failed forcemain between McCarthy Boulevard Pumping Station and the wastewater treatment plant.
- Initiate the detail design and construction of the methane gas utilization project at the wastewater treatment plant. This is a carryover project from 2008.
- Participation will continue as a member of the Wascana Upper Qu'Appelle Watershed Association.
- Complete the cleaning and CCTV inspection of several siphons.
- Complete a review of FOG (fats, oils, grease) source control. This will potentially include amendments to the Sewer Service Bylaw.
- Expand the grease inspection program to include reviewing oil grit separators for automotive service businesses and parking lots.
- Expand CCTV inspection and rehabilitation programs beyond integrated works locations to proactively address areas of potential concern in the system.
- Complete the 2009 program for CCTV inspection and upgrading program of trunk mains.

- Conduct a general inspection and inventory of the wastewater pumping stations to identify the condition and operational concerns of each station. This will be carried out jointly with the Operations staff. Upgrades at specific locations, such as Walker Street Lift Station, will be identified and prioritized.

- Identify and develop short, medium and long-term strategic plans and initiatives for upgrades to the wastewater system.

- Initiate the City Wide Wastewater Study. Convert the current modelling system to a more dynamic platform capable of evaluating system constraints under a broader range of flow conditions.

- Develop a service classification framework for the wastewater collection system in partnership with the City of Saskatoon.

- Initiate the water and sewer strategy project as a continuation of the overall asset management initiative for underground infrastructure.

Status of 2008 Initiatives

- Equipment and programming for an automated tracking and billing system for liquid waste haulers utilizing McCarthy Boulevard Pumping Station was rescheduled to 2009.

- A partial inspection of critical areas of the concrete 54" diameter forcemain delivering wastewater to the primary treatment plant was accomplished in 2008.

- Rebuilding and the providing of corrosion protection of concrete channels in the primary treatment plant and sedimentation building were accomplished in 2008. The sedimentation tank bridge collector rails and wear plates were renewed as well.

- The grease trap inspection program to reduce the number of wastewater collection blockages was reinstated.

- Consultants completed the pre-design and detail design work for the renewal/replacement requirements for the failed forcemain between McCarthy Boulevard Pumping Station and the Wastewater Treatment Plant.

- Pre-design work for the methane gas utilization project at the wastewater treatment plant was deferred to 2009.

- Completed consultant selection for a serviceability study on the ultraviolet disinfection equipment.

- Completed consultant selection for an engineering pre-design and detail design of a renewed wastewater screening system at McCarthy Boulevard Pumping Station.

- Construction began on the design and construction of two domestic pump stations with on-site storage facilities. The one in Harbour Landing will permit residential development for approximately 10,000 residents in Regina's southwest. The new southeast sector domestic pump station will provide wastewater service to the neighbourhoods known as the Creeks, the Greens on Gardiner, and portions of the Towns.

- The City completed the Northwest Sector Serviceability Study. The study reviewed drainage and wastewater serviceability for the northwest sector of the city. It provided information that will allow development of the Lakeridge Addition and Skyview in the northwest sector of the city in the short term and provided information that will guide future long-term development in the sector.

- Completed the CCTV inspection and trenchless rehabilitation of wastewater mains for the 2008 program.

- Completed the detailed design and construction of the lining project for the Wascana Valley Trunk from Winnipeg Street to Albert Street.

- Completed the cleaning and CCTV inspection of one of the wastewater siphons.

Wastewater System Overview

The wastewater collection and treatment system collects sewage from residential, institutional, commercial and industrial customers in the city. Wastewater treatment and final effluent meet provincial environmental standards. Service goals include:

- Collecting residential, commercial and industrial wastewater in the city and delivering it to wastewater treatment facilities.

- Producing a treated wastewater effluent that is biologically and physically safe for the environment and which meets the requirements of the provincially issued operating permit.

- Ensuring solids removed from the wastewater are treated and disposed of in an appropriate manner.

Components of the wastewater system shown in the map on the next page include:

- **Service Connections** – Building plumbing systems are attached to the wastewater collection system by a service connection pipe. The City owns and is responsible for the maintenance of the service connection pipe on the "City side" of the property line.

- **Collection Mains and Trunk Mains** – The service connection pipes are attached to wastewater collection mains which are typically 200-250 mm in diameter. The collection mains drain into trunk mains which are 300 mm or more in diameter.

- **Manholes** – Over 15,000 manholes provide access to the wastewater collection system for maintenance and repair.

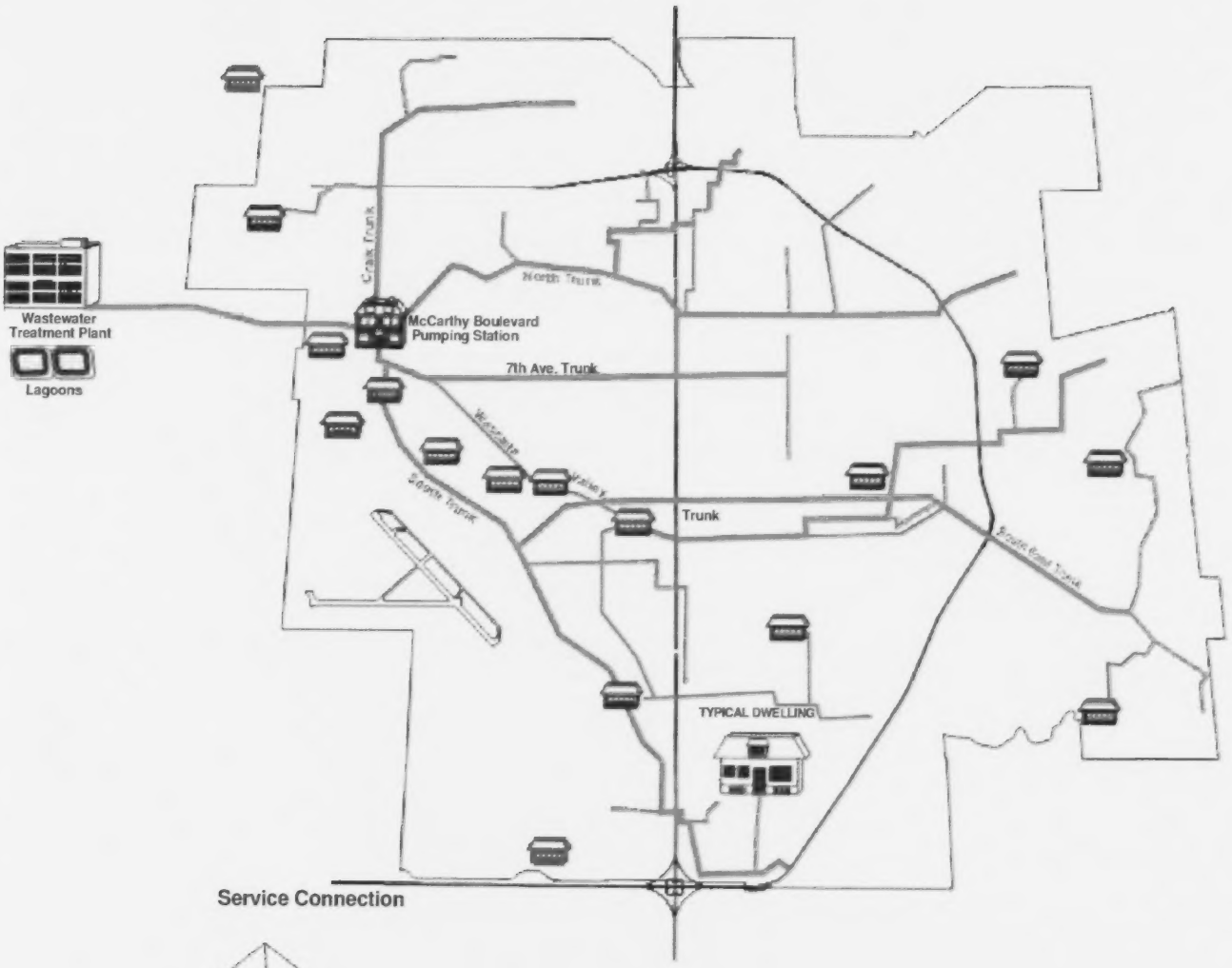
- **Lift Stations** – Wastewater flows through the collection system by gravity. In low-lying areas in the city, lift stations must be used to pump the wastewater to collection and trunk mains at a higher elevation. Wastewater then continues to flow by gravity from that point eventually reaching the McCarthy Boulevard Pumping Station. There are 16 lift stations in the wastewater collection system.

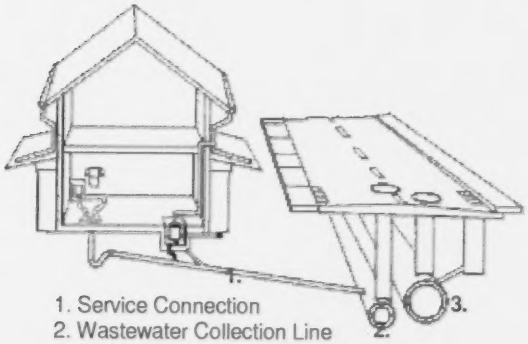
- **McCarthy Boulevard Pumping Station** – All wastewater collected in the city flows to the McCarthy Boulevard Pumping Station. The station provides screening and continuous transfer of wastewater from the collection system to the wastewater treatment facilities five kilometres west. The McCarthy facility is capable of transferring wastewater at up to five times the average daily rate. The station is also the location where commercial septic tank haulers offload into the wastewater system.

- **Wastewater Treatment Plant** – The plant processes wastewater through four stages of treatment:

  - Primary treatment removes sand, grit and organic material from the sewage.
  - Secondary treatment reduces dissolved organic material through the use of aerated lagoons.
  - Tertiary treatment removes phosphorus, algae and suspended solids by using aluminum sulphate and polymer.
  - Ultraviolet light is used to disinfect the effluent before it is released into Wascana Creek.

WASTEWATER SYSTEM





1. Service Connection
2. Wastewater Collection Line
3. Drainage Line (Storm Sewer)

Wastewater
Sewer Main

Lift Station

Wastewater System Objectives

The provision of wastewater collection and treatment services is critical to the health and environment of the citizens of Regina and surrounding area. Objectives for wastewater collection and treatment are:

- **Quality of Sewage Effluent** – Treated wastewater from the city's wastewater treatment plant is discharged into Wascana Creek, which flows into the Qu'Appelle River upstream from the town of Lumsden. Saskatchewan Environment establishes criteria for sewage effluent that each wastewater facility in the province must follow. The major criteria are total phosphorus, fecal coliform bacteria, pH, biological oxygen demand and suspended solids in the treated effluent discharged to Wascana Creek.

- **Reliability of the Collection System** – Improperly functioning wastewater collection systems cause inconvenience, health and safety concerns. Problems such as blockages and leaks can result from deterioration of pipes, sags and breaks in wastewater collection lines and connections caused by shifting soil, tree roots and foreign materials in the lines. To prevent these problems regular inspection and maintenance programs are carried out.

- **Separation of the Drainage System from the Wastewater Collection System** – The wastewater collection and treatment system is adequate to handle the day-to-day wastewater flows from the city. During rainfall and snow melt events, drainage water enters the wastewater collection system through basement sump pits connected to weeping tile drainage, catch basins inadvertently connected to the wastewater collection system, and infiltration through pipe cracks and openings such as wastewater manhole covers. Reducing the amount of drainage water entering the wastewater collection system can postpone large expenditures required for trunk mains and treatment plant expansions. Work is being done to reduce infiltration to both new and existing wastewater mains and trunks.

- **Odour Control** – One of the by-products of wastewater treatment and collection is odour. Such odours are unpleasant for nearby residents and staff. Reduction of effective odours is accomplished by the use of containment, chemicals and aeration lagoons. The aeration equipment injects oxygen into the wastewater, preventing a septic environment that produces strong odours.

- **Efficiency of Operations** – Electricity is primarily required to operate pumps and aeration blowers at the wastewater treatment plant. Chemicals such as aluminum sulfate and polymer used to remove phosphorus are a significant cost of operating the wastewater treatment plant. To minimize costs, it is important to make effective use of chemicals required to meet effluent targets. The most efficient use of electricity, chemicals and other inputs is accomplished by dynamic automatic process control and laboratory based performance information at all stages of the treatment process.

- **Maintaining Treatment Capacity** – Regina uses five aeration lagoons in its secondary treatment process. Over the years, as solids settle to the bottom of the lagoons and aeration systems deteriorate, capacity is diminished. To maintain treatment capacity, new lagoons must be built or old lagoons must be refurbished.

Wastewater Collection

To identify and prevent problems in the wastewater collection lines, the lines are cleaned and inspected, on average, once every seven years. Locations with chronic problems are cleaned more frequently with high-pressure water to dislodge grease and other matter and move this material into a holding tank. In conjunction with jet cleaning, lines are inspected through closed circuit television.

Sewer Maintenance Statistics	2004	2005	2006	2007	2008
Lines Cleaned - Jet Cleaning Program (metres)	65,770	67,627	47,426	57,840	45,319
Average Cost ($/metre)	1.03	1.23	1.21	1.68	1.62
Main Repairs (#)	12	9	12	10	9
Average Cost ($/repair)	3,647	6,755	6,517	6,482	15,148
Manhole Repairs (#)	57	71	70	80	66
Average Cost ($/repair)	725	675	1,045	836	966

Service connections that break down or block too frequently are either repaired or replaced.

Wastewater Connection Statistics	2004	2005	2006	2007	2008
Connection Repairs (#)	37	41	38	54	50
Average Cost ($/repair)	4,770	5,177	4,354	4,279	4,900
Connection Replacements (#)	107	92	103	92	87
Average Cost ($/replacement)	6,118	5,669	5,829	7,091	9,301

The wastewater collection system includes the operation of 16 lift stations. Electricity is a significant cost in operating the lift stations. Ongoing electrical and mechanical equipment maintenance is required, in addition to general maintenance on the station buildings and grounds. A project to equip every wastewater lift station with Supervisory Control and Data Acquisition (SCADA) equipment was implemented in 2002.

Wastewater Treatment

The McCarthy Boulevard Pumping Station pumps all wastewater to the Wastewater Treatment Plant. High reliability and capacity are critical to ensure this facility does not cause sewer collection system backup. One of two electric pumps handles normal daily flows while three high capacity diesel pumps handle extreme flow events, which happen when storm water infiltrates the sewer system during rainstorms or sudden snow melts. Screenings removed at the station are disposed of at the sanitary landfill.

McCarthy Boulevard Pump Station Statistics	2004	2005	2006	2007	2008
Total Annual Flow (Million Litres)	27,015	25,721	25,150	25,357	25,142
Bypass Flows (Million Litres) (Target: 0)	-	-	-	-	-
Screening Removal (Tonnes)	172	137	105	103	116

All wastewater is treated at the primary treatment plant. The plant uses settlement to remove solids from sewage. The City has established a target of 60% for suspended solids removal.

Treated sludge from the primary treatment process is stock piled on site for subsequent disposal. A target of >30% solids in the sludge has been set. A higher number means drier sludge, reducing hauling costs.

Primary Treatment Statistics	2004	2005	2006	2007	2008
Suspended Solids Removals (%) (Target >60.0)	62.0	62.0	60.6	61.8	62.0
Biological Oxygen Demand Removals (%) (Target >35.0)	35.0	33.0	34.3	30.5	32.6
Solids in Cake Sludge (%) (Target >30.0)	34.0	33.0	33.7	32.2	31.0
Tonnes of Sludge (Dry Weight)	1,646	1,655	1,568	1,619	1,438

The secondary treatment process that removes sewage organics measured as biological oxygen demand involves the use of aerated lagoons. Large blowers are used to force air through diffuser pipes and into the wastewater. Electricity is a major cost of this function. To prevent septic conditions and thereby reduce odours, a minimum of three parts per million dissolved oxygen is maintained in the lagoons. Higher oxygen transfer efficiencies reduce energy costs.

Secondary Treatment Statistics	2004	2005	2006	2007	2008
Oxygen Transfer Per Cent Efficiency					
Lagoon 1 South	3.8	3.0	4.2	4.2	4.2
Lagoon 2A	5.9	6.3	6.5	6.5	6.5
Lagoon 2/3	7.3	4.2	4.9	4.9	4.9
Average Lagoon Dissolved Oxygen Level mg/l	5.8	5.3	4.7	4.3	4.8

The tertiary treatment plant removes phosphorous, algae, suspended solids, bacteria and biological oxygen demand (BOD) from the lagoon effluent prior to disinfection and release of the treated effluent to Wascana Creek. The major expenditure is for liquid alum.

It is desirable to maintain a low alum to phosphorus ratio, as this is an indicator of how much alum is used in order to remove phosphorus as required to meet criteria established by Saskatchewan Environment. In wet years, plant flow capacity limitations degrades performance and partial bypassing may be required. The average effluent phosphorus requirement is ≤1.00 parts per million.

Tertiary Treatment Statistics	2004	2005	2006	2007	2008
Alum to Phosphorus Removal Ratio (Target <33.0)	39.21	34.7	25.6	26.1	29.7
Average Effluent Phosphorus (Target ≥0.90 & ≤1.00)	0.94	0.93	0.99	0.97	0.98
Bypass Flows (Target 0) ML	419	-	-	-	-

Disinfection of final effluent water prior to its release to Wascana Creek is performed by ultra violet light to reduce health risks to downstream water users.

Disinfection Statistics	2004	2005	2006	2007	2008
Average of Fecal Coliform Geometric mean counts/100 ml (weekly geometric mean permit is 100/100 ml)	40.7	20.4	9.5	7.8	4.6

The wastewater treatment plant laboratory does regular daily, weekly, and monthly tests at all stages of treatment to ensure effectiveness. Research and pilot treatment projects are also carried out. Testing is routinely carried out for over 50 different parameters. Samples are taken from 20 different sites on the Wascana Creek and the Qu'Appelle River system. Records of all tests and plant performance are maintained and distributed.

Test and Plant Record Performance	2004	2005	2006	2007	2008
Lab Analysis (#)	26,463	25,917	25,518	26,613	28,242
Treatment $/Million Litres	167.36	175.95	184.92	192.28	198.73
Treatment $/Tonne of Contaminants Removed	384.82	435.20	447.56	446.21	456.97
Treatment $/Capita	23.14	23.47	24.12	25.04	27.07
Overall Contaminants Removed (%) Target >90%	90.4	86.5	87.4	87.2	87.9

Wastewater Service Connection Refund Program

When customers report problems such as slow draining fixtures, they are instructed to contact a sewer service company to determine the nature of the problem, remedy it, and bill the customer directly. Upon presentation of the paid bill from the customer, with a complete description of the problem from the sewer service company, the City will provide partial or full reimbursement if a connection obstruction or back up occurred as a result of:

- A breakdown or severe sag in the service connection pipe on the City side of the property line.
- Blockage due to tree roots from trees on City property.
- Blockage due to tree roots from privately owned and City owned trees.
- A blocked wastewater collection main.

The total cost of reimbursements for 2008 is $127,152 (2007, $124,895). In recent years, City staff service connections when the problem is the City's responsibility to remedy.

Wastewater Service Refund Statistics	2004	2005	2006	2007	2008
Reimbursements (#)	1,366	960	1,200	1,160	1,097
Average Reimbursement ($)	83	91	97	108	116

Drainage

Initiatives for 2009

- Design of an inverted siphon to accommodate drainage in Harbour Landing has begun. The siphon will be subject to the review and approval of TransCanada Pipelines, which controls the easement through which the City will drain the lands at the south end of Harbour Landing.

- Whitmore Park Drainage Improvement (Richardson Park Detention Upgrade). This detention upgrade was identified in the South Regina/Whitmore Drainage Upgrades (2000). This project will provide a higher level of service in the Whitmore Park Area. The pre-design is complete and the detail design will start in 2009.

- Whitmore Park Drainage Improvement (Shannon Park Detention Upgrade). This detention upgrade was identified in the South Regina/Whitmore Drainage Upgrades (2000). This project will also provide a higher level of service in the Whitmore Park Area. The pre-design is already complete. Detail design will start in 2009.

- Dorothy Street Storm Channel Crossing Upgrade. This project is to upgrade the storm channel crossing at Dorothy Street and address erosion concerns. The estimated cost of the project is approximately $250,000.

- CCTV inspection and trenchless rehabilitation of drainage mains is projected to be the same as last year, which was 15 km ($333,000 in 2008).

Status of 2008 Initiatives

- Construction of a major drainage facility known as the Harbour Landing Drainage Channel was initiated in 2008. The channel will outlet at the existing south storm channel at Regina Avenue.

- The Ring Road Lift Station construction is approximately 85% complete. Items left for construction include the concrete chamber, construction of the access road and completion of the new lift station building.

- The Stewart Russell Detention Upgrade Project is approximately 22% complete. The majority of earth excavation and disposal was completed in December 2008. Construction will commence in the first week of May 2009 and be completed by September 2009. The remaining items include underground piping, irrigation, electrical work, landscaping and pavement and concrete removal/restoration.

- Completion of approximately 15 km of CCTV inspection and trenchless rehabilitation of drainage mains.

- The Drainage Master Study is near completion. The study focuses on the adequacy of the creeks, drainage channels and detention/retention ponds in handling runoff from the 17 subdrainage areas in the city.

- The Northwest Sector serviceability study has been completed and the Northeast Sector Serviceability Study is being initiated.

- The Dieppe Drainage Project Phase III (stormwater ditch west of Courtney Street - west of the back alley along Courtney Street) is approximately 90-95% complete. Remaining items include the

construction of the stormwater outlet structure to Wascana Creek, leveling of excavated materials in the spring and the seeding of the surrounding area will take place in May 2009.

Drainage System Overview

The drainage system collects water from rainfall and melting snow in and around the city and leads it to Wascana and Pilot Butte Creeks. The system serves over 60,000 residential and commercial properties. Service goals include:

- Collecting and controlling drainage water within the city to minimize inconvenience, property damage and danger to the public.

- Monitoring the potential for flood conditions in Wascana Creek and the drainage channels and carrying out flood control measures as required.

The **Minor Drainage System** consists of the underground piping system that collects and transports small to medium amounts of drainage from rainfall, snow melt and minor storms. Components of the minor system include:

- Catch Basins – Over 25,000 catch basins located in streets and open space areas collect water and direct it into the drainage lines. Catch basins are designed to keep sand, silt and other matter out of the piping system by causing it to settle to the bottom of the catch basin.

- Lines, Mains and Trunks – There are approximately 700 kilometres of drainage lines located beneath streets. Lines and mains range from 200 mm to 1,200 mm in diameter, with trunks over 1,200 mm.

- Manholes – Over 15,000 manholes provide access to the system for maintenance and repair.

- Lift Stations – Drainage water flows through the system by gravity. There are low-lying areas where lift stations are used to pump the drainage water to a higher elevation. The water flows into a lift station at a low elevation, and is pumped to a higher level where it continues to flow through a pipe or channel. There are 13 lift stations in the drainage system.

The **Major Drainage System** is used when drainage water exceeds the capacity of the minor system and must flow over land. The major system is designed so that water will flow down roadways and land easements. Components of the major system include:

- Graded Roadways, Land Easements, Swales, and Lots – In order for the runoff water to flow over land to a point where it can be collected, the surface area must be properly sloped.

- Dry Bottom Detention Facilities – These are lower land areas constructed in open space areas such as parks. The detention facility contains outlets to and from the minor system. During periods of heavy rainfall, water that would otherwise overload the minor system enters the detention facility and is stored temporarily. The water from the detention facility then flows back into the minor drainage system at a later time when flows have gone down.

- Lake (or Wet) Retention Facilities – Lakes such as the ones in Lakeridge and Windsor Park are similar to dry bottom detention facilities, except they normally contain water all year for aesthetic reasons. When the minor system is overloaded, the water in these ponds rises, and then drops when the excess water flows back into the minor drainage system.

- Underground Detention Tanks – Underground detention tanks are also used, particularly in some of the downtown areas, to store excess water temporarily until it can be accommodated by the minor drainage system.

- Drainage Channels and Creeks – Drainage water empties into the drainage channels or Wascana Creek. The drainage channels function as very large drainage lines, with earthen banks used to control the water rather than enclosed pipelines. The drainage channels carry the runoff to Wascana Creek. Drainage from the Rowatt Flood Control Project south of Regina flows to Wascana Creek through constructed channel within the City Limits.

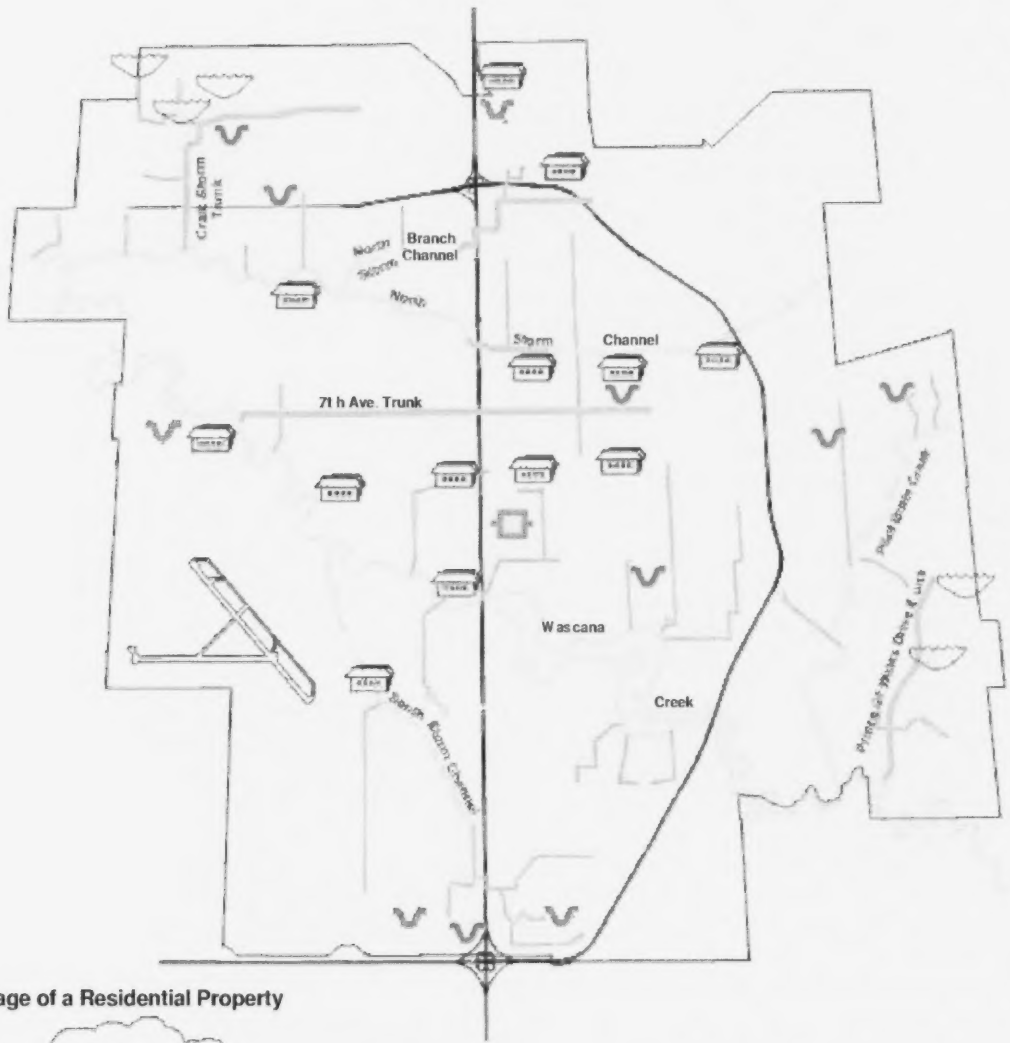
Although the major and minor systems are described as separate systems, they are part of an overall drainage system and must work in conjunction with each other. The systems are depicted in the map on the next page.

Drainage System Standards

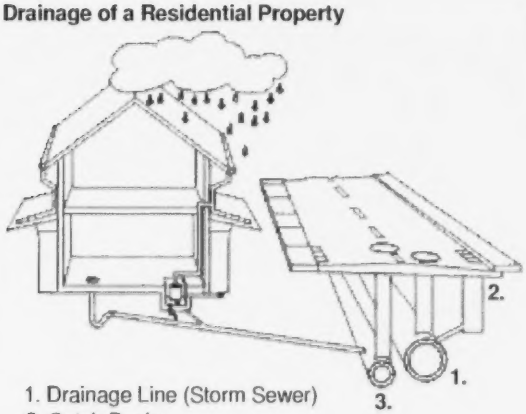
Standards for drainage system design are normally expressed in terms of the size and type of storm a system can theoretically handle. For example, a drainage system may be designed to handle a 1:5 year storm, which means that it can handle the size of storm that statistically only occurs once in five years in the area. A drainage system designed to handle a 1:100 year storm would be able to handle the size of storm that statistically occurs once in 100 years in the area.

Statistical information is obtained from the Atmospheric Environment Service of Environment Canada to determine storm sizes. In the past, rainfall data was only available from the airport, but three new data collection points have been added around the City since rainfall can vary significantly by area. Computer modelling is then done to determine the size of other storms.

DRAINAGE SYSTEM



Drainage of a Residential Property



1. Drainage Line (Storm Sewer)
2. Catch Basin
3. Wastewater Collection Line

Lift Station

Retention Pond

Dry Bottom Detention

Underground Detention

Storm Sewer Trunk Main

Storm Channel

The following are some of the major rainstorms that have occurred in Regina over the past 30 years:

June 1975	1:25 year storm
July 1983	1:100 year storm (108 mm of rain in four hours)
June 1994	1:25 year storm
August 1995	1:25 year storm (severe hail)
July 2001	1:100 year storm (50 mm in one hour)
August 2004	1:100 year storm (76 mm in one hour)

Factors examined in determining the "size of storm" include:

- Total rainfall volume.
- Intensity of rainfall – a storm that drops 100 mm of rain in one hour is much more difficult to handle than one that drops 100 mm over six hours.
- Previous rainfall – if the ground is saturated before the storm, no additional water can soak in. Flows in the drainage system are therefore greater.

Standards for drainage systems have been raised over time, and have been applied to new developments. However, it is very costly to retroactively apply higher standards to existing development. Details of the standards include:

- **New Development Standards** – The "minor" drainage system consists of catch basins and underground lines that quickly collect and transport water. The "major" drainage system, consists primarily of aboveground facilities such as roadways, easements, swales, and detention and retention facilities that can handle larger volumes of water.

  For new developments in the city, minor systems must be designed to handle a 1:5 year rainfall event. This corresponds with the general standard used across North America. While a higher standard would provide a higher level of service, the cost to construct underground facilities to handle larger storms is prohibitive. The major systems must be designed to handle a 1:100 year event. Until recently, the City had a minimum standard of 1:25 year event, but encouraged developers to target the 1:100 year event. This standard is now used in most larger prairie cities. The difference in costs between the two targets is not significant. As well, past experience has shown it is much more cost effective to design a new development to a high standard initially. Raising the standards in an area after it has been developed is very costly.

- **Existing Development Standards** – The City has adopted a target of 1:5 year events for existing minor systems, and 1:25 year events for existing major systems. Some areas of the city do not meet these targets. In the early 1980s, a program to study the drainage problems was initiated to identify solutions and carry out remedial measures to mitigate drainage issues. A Drainage Master Plan designating 17 areas was adopted. Conditions in each area are assessed, problems identified and potential solutions proposed. Over time, work required to address the problems is carried out through the capital program.

Most of the property damage caused in Regina during intense rainstorms has been the result of basement flooding. The flooding was caused by runoff water entering the wastewater collection system, resulting in sewer overload and back up into basements. Although the drainage system is separate from the wastewater collection system, there are a number of ways storm water can enter the wastewater collection system. These include:

- Some older buildings still have roof downspouts connected to the wastewater collection system.
- Runoff water on lots with poor grading adjacent to the building enters weeping tiles and collects in basement sump pits, which then drain into the wastewater collection system.

The City has established an objective to eliminate any direct connections between drainage and the wastewater collection system. An objective has also been established to reduce the runoff water entering the wastewater collection system from basement sump pits by educating homeowners about steps they can take to prevent such problems. In addition, a bylaw amendment that would prohibit weeping tile drainage discharge to the wastewater system in new development areas is under consideration.

The most well designed system cannot function effectively unless it is properly maintained. To ensure the system functions as designed, the following objectives have been established:

- Drainage lines over 450 mm are regularly inspected and cleaned as required.
- Catch basins in areas where leaves are a problem are typically cleaned every two years and outlying areas are cleaned on a seven-year cycle.

Dykes along Wascana Creek have been constructed and flood plains are maintained to contain creek flooding. The City's objective is to prevent major damage to property and maintain public safety in the event of flood conditions. Toward that end, monitoring is carried out during spring runoff to determine the risk of flood conditions and appropriate action is taken as necessary. The City has established an objective and capital plans to upgrade dykes to meet a 1:500 flood event level, the provincial standard. The upgrading of the dykes in Riverside was completed in 2005 and those in the Dieppe area were completed in 2007.

Drainage System Maintenance

To identify and correct problems in the drainage lines, they are cleaned and inspected on average once every seven years. In conjunction with jet cleaning some lines are inspected by a closed circuit television camera.

Jet Cleaning Program Statistics	2004	2005	2006	2007	2008
Lines Cleaned (metres) (objective 54,987 m/yr)	60,620	50,693	22,993	24,443	14,481
Average Cost ($/metre)	1.07	1.06	1.28	1.87	1.87

Drainage system lines requiring repairs are mostly identified as a result of the TV camera condition surveys.

Drainage System Maintenance Statistics	2004	2005	2006	2007	2008
Main Repairs (#)	4	2	2	6	5
Average Cost ($/repair)	3,834	9,841	6,673	7,841	4,978
Manhole Repairs (#)	54	41	43	29	45
Average Cost ($/repair)	678	788	932	1,039	999

Note:
The increase in the average cost per main repair for 2005 resulted because there were only two repairs, one of which was under concrete and had a relatively high restoration cost.

Since catch basins are designed to keep sand and other materials out of the drainage system, they require regular cleaning. Repairs to catch basins consist of raising or lowering the grates, replacing bricks and blocks, as well as replacing broken or missing covers. In addition, broken leads between the catch basin and the drainage lines are also replaced.

Catch Basin Statistics	2004	2005	2006	2007	2008
Catch Basin Repairs (#)	92	98	95	142	113
Average Cost ($/repair)	767	574	775	585	666
Lead Repairs (#)	31	26	26	20	30
Average Cost ($/repair)	3,077	2,679	2,638	3,354	4,978
Catch Basins Cleaned (#)	3,960	2,917	3,534	1,198	982
Average Cost ($/catch basin)	24	31	37	32	22

Forecasting and Controlling Floods

Flood conditions on Wascana Creek are relatively rare. In 1996, high snowfall caused flood conditions along the creek. Creek flows were projected to be 85 cubic metres per second, or a 1:30 year flood. Although the actual peak levels were not as high as the initial predictions, it was necessary to take preventative action. Costs were incurred for labour and equipment for sandbagging and pumping water out of flooded areas, as well as repairs for some City owned structures damaged along the creek, such as the Pinkie Road Bridge. In 1999, flood control costs were incurred as a result of a large snow accumulation late in the winter, followed by a very quick spring thaw. The estimated creek flow was 40 cubic metres per second, or a 1:10 year event.

Forecasting flood conditions involves communicating with provincial agencies regarding snow volumes and predictions for spring thawing. Early in the year, Saskatchewan Watershed Authority conducts assessments of the snow cover in the Wascana Basin, as well as other areas around Saskatchewan. If the conditions warrant further concern, additional monitoring takes place. As the spring thaw begins, water flows are measured throughout the creek system.

Budgets are prepared assuming spring runoff levels of an average year, where no special flood control measures are required like sand bagging and pumping behind the dykes when drainage line outlets are closed. The budget covers the cost of monitoring conditions on Wascana Creek and the drainage channels, as well as putting up barricades in areas where thin ice and water levels could pose a danger to the public.

Home Flood Protection Education Program

This program informs homeowners about the causes of basement flooding and the measures they should undertake on their property to prevent flooding damage from intense summer rainstorms. The program involves media advertising, an information trailer, display of a physical model of a typical home illustrating flood protection measures, flood protection classes, a mail out home flood protection education kit and internet page flood proofing information. Mitigation measures are required on both City and private property to accomplish neighbourhood service level improvements for managing large summer storm events and minimizing property damage and risk.

The program is concentrated between June and September during the time when most severe summer rainstorms occur and the public interest in drainage mitigation measures is greatest.

The Home Flood Protection model was displayed at the RRHBA Home and Garden Show and the Public Works Department Day.

Engineering and Operations Administration

The majority of the information regarding water, wastewater and drainage services is provided in the preceding sections. The operating budget summary includes costs related to Engineering and Operations Administration.

Objectives for the planning, design, operations and maintenance engineering include:

- **Long Range Planning** – In order to meet customer demands, water, wastewater and drainage systems require high levels of capital investment. It is necessary to anticipate and plan for future requirements so that the necessary future investment can be provided. To accommodate this, the following objectives have been established:

  - Long range plans (20 to 25 years) should be carried out regularly for each of the three major utility systems.

  - Ongoing conditions should be monitored and the long range plans updated as new information becomes available.

- **Effective Management of Capital Program** – The Public Works Division provides planning and design engineering services for the Utility. All capital projects should be completed within their established timelines and budgets.

- **Establishment of Construction Standards** – Standards are developed for all infrastructure construction, including those relating to the utility systems. These standards are applied to construction carried out by City crews, contractors and developers. Over time, standards evolve as new construction techniques and materials become available. The objective of these standards is to optimize performance and minimize the life cycle cost for the provision of the services. These standards are managed through the Planning and Development Division.

- **Public Education** – There are a number of areas within the utility operations where customer actions can collectively affect service and costs. Areas where it is desirable to change customer behaviour, such as the manner in which they use the systems, are regularly identified. Public education is then carried out in an effort to change customer behaviour. General awareness is also considered part of public education and is run as a program when required. Current programs include:

  - Water Conservation
  - Cross Connection Control and Backflow Prevention
  - Home Flood Proofing
  - Creekwatch
  - Wastewater Discharge Practices

Engineering and Project Management

The Water and Sewer Services Department, the Environmental Services Department, and Development Engineering Department are responsible for planning, designing and supervising construction of the Utility systems infrastructure. A primary responsibility is overseeing the annual capital program. Projects carried out range from annual infrastructure renewal projects to less frequent major projects such as water treatment or wastewater treatment plant expansions. Engineering and design work may be done in-house or by an external engineering firm. Construction work may be done by Public Works Division crews or by external contractors. The resources used for projects depend upon the nature of the project, the availability of resources, and the expertise required.

Environmental Monitoring

Environmental monitoring activities include:

- Ground water monitoring at the sewage treatment plant.
- Surface water quality monitoring in the City's four retention lakes.
- Stormwater quality monitoring of urban drainage discharge to Wascana Creek and Wascana Lake.
- Snow dumpsite runoff monitoring.

Review of Development Proposals

Much of the City's water, wastewater and drainage systems are constructed by City staff, or by contractors under the direction of City. In the case of new development and re-development of existing areas, developers are responsible for constructing infrastructure including water, wastewater and drainage systems. This construction forms part of the utility systems, and the City assumes responsibility for operation and maintenance of the systems.

Development proposals are reviewed by the Planning and Development Division to ensure design and construction meets City standards. Installations that do not meet City standards are identified and corrected by the developer.

Technical and Engineering Support

Public Works Division technical and engineering staff provide support to the field personnel responsible for maintaining the water, wastewater and drainage systems, and for carrying out capital construction work for projects done in-house.

In addition, staff provide construction scheduling, construction coordination and administrative and technical construction management services, which includes:

- Establishing, monitoring, and updating construction schedules.
- Coordinating construction with utility companies.
- Tracking and monitoring expenditures of various capital projects.
- Estimating the costs of water and sewer construction projects.
- Reviewing and analyzing unit cost information.

Customer Billing and Collection

Initiatives for 2009

- **Utility Billing System Upgrade** – The customer information system used by the City was implemented in 1994, and had its last major upgrade in 1999. The project to upgrade the Indus Advantage CIS system was approved through the Information Systems project approval process. Since the versions of the software, operating system and database are currently unsupported, this upgrade is a very high priority for the area. This upgrade will result in a fully supported system. As part of the implementation, a number of smaller system-related initiatives are being reviewed. It is expected that a number of initiatives will no longer be required as a result of changes to the system, while others will be incorporated into the upgrade. Any system initiatives that have not been addressed through the upgrade will be reviewed and dealt with after the completion of the project.

- **Implementation of Dynamic Delinquency** – Over the next 12 months, the Administration will be implementing Dynamic Delinquency functionality, this allows decisions to be made based on customer behavior rather than type of customer (new, renter, owner) providing a more consistent approach to customer service. In order to implement the full functionality of Dynamic Delinquency, deposits would be used as a tool in specific customer behaviours rather than basing deposits on customer type. There are no additional capital costs to implement this option. There will be significant savings due to the reduction of customization that would be involved to maintain the current process.

- **Reduction of Customizations** – As part of the larger Utility Billing Upgrade, the Administration continues to review processes to ensure that customizations are eliminated. The goal is to operate within the base system as much as possible therefore ensuring a more secure system and strong data integrity.

Status of 2008 Initiatives

- **Delinquency Review** – As part of the larger Utility Billing Upgrade, the Delinquency Processes for Utility Billing was reviewed. The utility created numerous customizations and manual processes in order to manage the collection of delinquent accounts. While these processes work towards reducing bad debt write-offs, they are labour intensive and would result in a number of customizations in the system upgrade. The review leads to a significant process change that will be implemented in 2009.

- **Online Documentation** – In 2008, the online documentation was developed for the Utility Billing System. The documentation provides support to the current users, and is an invaluable tool for new staff in utility billing. The documentation is also utilized as a reference as for the system upgrade identifying where processes can be streamlined and help identify processes affected by changes being made.

Customer Service

Service Regina provides front line customer service for the utility as well as other City services. This priority is applied to all aspects of operations, especially in contact with external customers, but also in dealings with internal customers and in responses to questions and requests for information. Objectives for customer service include:

- Customer applications for water services and disconnections are handled accurately.
- Customers can access information about their bill and receive prompt responses to their inquiries.
- Payments can be made using convenient payment methods.
- All service requests are processed within a reasonable time frame, given the nature of the service required.

Customer call centre volumes are monitored to ensure key performance indicators (KPI) are being met. The two primary KPIs are that calls are answered within 25 seconds, 80% of the time, and that abandoned calls are kept below 5%.

Customer service is accessible by telephone, mail, fax, in-person and electronically via the City's website. Internet requests and e-business inquiries continue to increase and this continues to be an area of focus. Continued awareness of customer needs to access information and services quickly and efficiently in the manner of their choosing is the focus of customer service efforts.

Service Regina's one-stop shop approach provides customers with information about the City's services through one central contact number. By directing customer calls to the area concerned, staff ensure that the customer is dealt with effectively and efficiently at their first point of contact.

Service Regina strives to ensure customer satisfaction on every occasion in the five essential elements of service: timeliness, knowledge and competency, courtesy, fair treatment and final outcome. When all five of these elements are in place, customers rate the services provided highly. The goal of the customer service area is to ensure satisfaction in every one of these areas with every customer.

Service Regina received 187,732 calls in 2008 and answered 177,556 achieving the abandoned rate target of 5%. In addition, Service Regina processed 118,388 cashier transactions. Approximately 45% of the calls and payments through Service Regina are related to the Water Utility or a related inquiry or service request.

Administration, Billing and Collection

Objectives for billing and collection include:

- As of 2007, customers are billed every month.
- Customers receive accurate, timely, and informative bills.
- New payment methods are introduced where they can provide convenience to the customer, and where they are cost effective.
- Collection action is taken as required.
- Percentages of overdue accounts and uncollectible accounts are at a reasonable level.

The administration of customer accounts and the billing and collection function includes:

- Managing customer accounts, including setting up new customers, discontinuing accounts and transferring accounts from one individual to another. There is also a requirement to manage contracts with out-of-town water users who receive water from the City.

- Managing activities related to water meters includes obtaining meter readings and handling turn ons or turn offs of water lines. Customers are divided into automated meter-reading routes so the meters are read according to a monthly schedule.
- Water services must be connected and disconnected in response to customer requests and as a result of collection efforts. The following table provides information on the number and reasons for turn offs and turn ons.

Turn On/Turn Off Statistics	2005	2006	2006	2007	2008
Daytime Turn Ons (#)	2,338	2,076	2,076	2,021	1,591
Daytime Turn Offs (#)	2,568	2,270	2,270	2,266	1,882
Turn Offs Due to Arrears (#)	1,053	1,109	1,109	1,171	1,283
Total	5,959	5,455	5,455	5,458	4,756

- Generating customer bills – Customers are divided into billing cycles so each customer is billed every month. One billing cycle is processed each working day.

- Collection efforts take many forms. Interest is added to outstanding balances, which encourages timely payment. When accounts remain outstanding, payment arrangements are negotiated where possible. This includes maintaining a post-dated cheque database, as well as providing equalized payment options for utility accounts. The following table provides a summary of the utility accounts outstanding as at December 31, 2008.

Utility Receivables - December 31, 2008

Analysis of Receivables	Amount Outstanding	Per Cent of Total
0-30 Days	$ 3,119,302	78.0%
31-90 Days	388,206	9.7%
91-150 Days	162,147	4.1%
151-365	113,886	2.8%
>365 Days	215,658	5.4%
Total	$ 3,999,199	100%

Collection efforts are not always successful. Provincial legislation provides the authority to enforce payment. There are a variety of options available which include: discontinuing utility service, transferring outstanding utility balances to the tax roll if the account is with the property owners or placing the account with an external collection agency.

Effective in the 2nd quarter of 2009, Dynamic Delinquency functionality will be implemented. Dynamic Delinquency functionality allows decisions to be made based on customer behavior rather than type of customer (new, renter, owner) providing a more consistent approach to customer service. The first approach to collecting outstanding balance will be to disconnect the utility service. Policy will be developed for the application of security deposits and tax transfer as a collection tools; they will not be the first option for collection of outstanding balances.

Prior to Dynamic Delinquency when a Utility account entered delinquency, it followed one of two paths. If the account holder could be identified as an owner on the tax roll, the account was subject to a tax transfer. If the account holder was not the property owner, the account was subject to disconnection. Virtually all of the accounts identified as "owner" accounts were collected through the tax transfer. For "renter" accounts, the City had good success in collecting outstanding charges through disconnection of service, as long as the account remains active. Typically, if this option is pursued, the customer either provides payment or enters into adequate payment arrangements. When a customer moves without notifying the City, collection of outstanding balances decreases. Once the customer account is inactive, the account is transferred to a collection agency. In most cases, the customer will have two or more bills outstanding at that time.

If a customer with an account from an old address moves to a new address, the City requires payment or acceptable payment arrangements immediately. For those accounts where the customer does not move to a new location with an account, the success rate for collection is greatly reduced. Also, these accounts do not have a high rate of success when placed with a collection agency.

Debt Costs

This program includes the cost of principal and interest for debt issued to finance utility capital projects, along with the cost of the debt issue. Debt charges are made up of two elements:

- Interest – This is the cost of interest payments on all outstanding serial debentures.
- Principal repayments – These payments represent the cost to redeem the principal portion of a serial debenture that matures each year. A serial debenture does not remain outstanding in full for the life of the debt issued. As with a mortgage, a portion of the principal amount of the debt matures and is paid each year until the debt is fully mature.

The following table shows the existing annual debt charges and debt maturities.

Schedule of Debt Charges and Debt Maturities ($000's)

Year	Annual Debt Charges	Debt Maturities		
		Debt Maturing	Per Cent of Total	Cumulative Percentage Reduction
2009	$ 5,612.0	$ 4,600	23.2%	23.2%
2010	5,384.0	4,600	23.5%	46.7%
2011	5,145.0	4,600	23.5%	59.2%
2012	4,898.0	4,600	23.5%	77.2%
2013	646.0	600	3.1%	95.2%
2014	616.0	600	3.1%	97.6%
	Total	$ 19,600	100%	

The 2009 – 2013 Utility Capital Program requires external debt financing of $16 million in 2009, $40 million in 2010, $57 million in 2011, $30 million in 2012, and $5 million in 2013. The utility model includes funding for debt issuance costs and the repayment of projected debt issues based on a ten-year term and an interest rate of 5%.

For further details on debt projections for future years, see Utility Capital Funding Section.

Utility Capital Program

Capital Program Summary

	2009	2010	2011	2012	2013	Total
Capital Expenditures ($000's)						
Water Supply, Pumping & Distribution	**13,186**	16,135	16,260	15,405	9,490	70,476
Wastewater Collection & Treatment	**25,057**	46,055	71,023	34,765	5,555	182,455
Drainage	**14,310**	27,935	8,035	6,885	13,885	71,050
Total Expenditures	**52,553**	90,125	95,318	57,055	28,930	323,981
Capital Funding ($000's)						
General Utility Reserve	**15,791**	18,663	18,862	18,196	11,724	83,236
Service Agreement Fees - Utility	**17,132**	31,120	16,894	5,509	10,500	81,155
Debt	**15,632**	40,080	57,036	29,851	4,900	147,499
Other External Contributions	**3,998**	262	2,526	3,499	1,806	12,091
Total Funding	**52,553**	90,125	95,318	57,055	28,930	323,981

Infrastructure Overview

Regina has a substantial investment in utility infrastructure. A challenge for Regina, and other cities, is to generate sufficient funds to maintain these assets. The gap between the annual requirement to sustain the infrastructure and the annual investment is referred to as the "Infrastructure Gap". Regina is a relatively young city and has to some extent been shielded from the full impact of its utility infrastructure deficit since, until recently, much of the buried infrastructure was still within its expected service life.

In recent years, there has been increased discussion of the infrastructure deficit faced by cities, and the need for additional funding from the senior governments and/or alternate revenue sources for cities. The Federal Government has implemented a "new deal" for cities. Components of the new deal include funding for infrastructure programs and a sharing of the federal gas tax. In 2004, the Federal Government revised the policy for GST rebates to provide a full rebate to municipalities. The Municipal Rural Infrastructure Fund (MRIF) started in 2005 and was continued in 2008. Regina's share of the funding is about $6.8 million in total or about $1.7 million per year over the four years. The 2005 Federal Budget provided a share of the federal gas tax to municipalities. Regina's share is about $4.4 million in 2007, $4.5 million in 2008, and increases to $11.1 million in 2009. Issues related to the funding include:

- Funding received by Regina through senior government grant programs is directed to general and utility capital projects. As per City Council direction, for 2005 through 2009, to the extent that funding is used for utility capital projects, an equivalent amount is transferred from the Water and Sewer Utility to the General Capital Program. The utility budgets have been developed based on the utility receiving the full grant allocation for the Municipal Rural Infrastructure Program with an equal amount transferred to the General Capital Program. The policy regarding the use of capital funding will be reviewed as part of the development plan and once further information about Federal programs is available.

- There will be increased funding available for transportation infrastructure, including roadways. Most of the utility infrastructure is under roadways. When roadways are re-developed, utility infrastructure is evaluated and upgraded if necessary. Increased funding for roadways will result in increased funding requirements for the Water and Sewer Utility.

In 2004, City Council approved the Residential Growth Study (Report CR04-196). Implementation of the Residential Growth Study will require integration of infrastructure requirements into sector and concept plans. These plans will detail the physical and engineering aspects of the new infrastructure along with funding and phasing of the work. Current development policies are based on the provision of trunk services uniformly throughout the city, with Servicing Agreement Fees, levied pursuant to *The Planning and Development Act, 2007*, the same for all newly developed land, irrespective of location. The development scenarios adopted in the Residential Growth Study result in significantly different trunk infrastructure requirements, and hence infrastructure costs, for each of the growth areas.

Section 22.4 of *The Cities Regulations* requires Council to adopt a capital investment strategy that includes the method used for determining capital plans respecting the waterworks. Capital requirements (capital investment strategy) are determined based on engineering and planning studies that take into account the infrastructure requirements of the utility required to meet the service goals of the utility, as determined by City Council or prescribed by legislation. Infrastructure requirements are being addressed through a series of studies. Studies recently completed or underway include:

- The Wastewater Collection System Assessment Study, completed in 2004, estimated the replacement value of wastewater collection system as $635 million. The study defined requirements for the long-term sustainability of the wastewater collection infrastructure. In 2006, further work was done to investigate inflow and infiltration to the wastewater collection system.

- The review of the Long Term Water Utility Plan was completed in 2006. It examines the present condition of Regina's water system, forecasts the requirements for the next 20 years and provides a plan for meeting future requirements. A rough estimate of the replacement value for the water distribution system is $250 to $300 million, with a further $350 to $400 million for the supply system, including the City's share of the Buffalo Pound Water Treatment Plant.

- In 2007, the City of Regina partnered with the City of Saskatoon, for the development of a Buried Asset Repair Strategy. Approximately two-thirds of the water distribution and wastewater collection systems were constructed in a thirty-year period between the early 1950s and the late 1970s. In this period, almost all of the water distribution system construction used asbestos cement pipe. Asbestos cement pipe has a reliable service life, under the conditions that prevail in Regina, of 50 years. In recent years, there has been an increasing frequency in breaks in asbestos cement pipe. This pattern will likely continue as the system ages.

- The value and infrastructure requirements of the sewage treatment plant were documented through the Sewage Treatment Planning Study. The final report was completed in late 2005. The initial Wascana Creek Receiving Environment Study was also completed in 2005. Both studies were used in developing capital plans for the wastewater treatment plant upgrade and to develop future plans to create a receiving environment water quality model.

- In 2009, the City of Regina will complete the pre-design study for the Wastewater Treatment Plant Expansion Project. This project is required to meet new regulatory requirements as well as provide expanded hydraulic and process capability associated with future City growth.

Once the studies are completed, the full scale of the infrastructure gap can be determined. The program presented in the 2009 – 2013 Capital Budget addresses infrastructure requirements identified to date, however, there are a number of outstanding renewal requirements that are likely to be identified as these studies are completed.

Water Supply, Pumping and Distribution

Capital Summary ($000's)	2009	2010	2011	2012	2013
Capital Expenditures					
1. Water Supply:					
- System Improvements	**1,000**	1,200	-	-	-
- Buffalo Pound Water Treatment Plant Upgrade	**1,100**	935	9,020	12,495	6,450
- Buffalo Pound Pipeline Upgrade	**250**	-	-	-	-
- Albert Street Reservoir Roof Repair	**75**	1,700	1,700	-	-
2. Water Pumping:					
- System Upgrades for Pressure Zone 2	**1,000**	9,000	-	-	-
3. Water Distribution:					
- Water Infrastructure Renewal	**500**	1,250	1,300	1,250	1,400
- New Trunk Watermains	**4,230**	410	2,600	-	-
- Watermain Deadend Connection	**100**	100	100	100	100
- Hydrant Replacement	**50**	150	150	150	150
- Water Service Line Replacement	**1,000**	1,200	1,200	1,200	1,200
4. Other Capital Projects:					
- Trench Settlement Remediation	**50**	170	170	170	170
- AMR System Equipment Replacement Upgrade	**40**	20	20	40	20
- Global Transportation Hub	**3,540**	-	-	-	-
- Bulk Water Loading Station	**251**	-	-	-	-
Total Expenditures	**13,186**	16,135	16,260	15,405	9,490
Capital Funding					
General Utility Reserve	**4,928**	4,873	10,834	10,706	6,484
Other External Contributions	**308**	262	2,526	3,499	1,806
Service Agreement Fees - Utility	**4,410**	1,620	-	-	-
Provincial Capital Grants	**3,540**	-	-	-	-
Debt	**-**	9,380	2,900	1,200	1,200
Total Funding	**13,186**	16,135	16,260	15,405	9,490

Water Supply

Funding will cover consulting, contractors, property, materials and any other work, resources, staff, technologies or support related to each of the projects described below.

- **System Improvements** – $1M is provided in 2009 and $1.2 M in 2010 to repair and replace main valves, valve structures and other miscellaneous work on the 900 mm Buffalo Pound to Regina pipeline. The pipeline is 50 years old and requires improvements to provide greater reliability for the water supply to the City, and reduce the number of emergency repairs.

- **Buffalo Pound Water Treatment Plant Upgrades** – The Long Term Water Utility Study Update recommended upgrades be considered at the Buffalo Pound Water Treatment Plant. In 2009, $1,100,000 is provided for pre-design engineering and $935,000 is included in 2010 for detailed

design engineering. In each of 2011, 2012 and 2013 $9,020,000, $12,495,000 and $6,450,000 respectively is provided for construction of upgrades.

- **Buffalo Pound Pipeline Upgrades** - The construction of a swab retrieval structure to allow swabbing of the 1,050 mm pipeline from the Buffalo Pound Water Treatment Plant to the City is required to maintain water quality and improve operating efficiency. Pre-design has been completed for the retrieval structure and construction will take place in 2009. Other upgrades to the pipeline, such as design work and the removal of a check valve, will take place, as necessary in 2009.

- **Albert Street Reservoir Roof Repair** - Evaluation of the Albert St. Water Reservoir roof was undertaken in the fall of 2008. Funding is required in 2009 and 2010 to complete the assessment and undertake potential repairs for the roof. Concrete spalling has been noted in past inspections with recommendations to continue to monitor and assess for repair.

Water Pumping

Funding will cover consulting, contractors, property, materials and any other work, resources, staff, technologies or support related to each of the projects described below.

- **New Pumping Station for Pressure Zone 2** – In 2008, $250,000 was provided for an engineering analysis to determine the best alternative for improving pressure and fire flows for existing and proposed development in the north portion of the city. Detailed design and tendering of a new pumping station is scheduled for 2009 and construction for 2010.

Water Distribution

Funding will cover consulting, contractors, property, materials and any other work, resources, staff, technologies or support related to each of the projects described below.

- **Water Infrastructure Renewal** – $5.75 million is provided over five years to fund the replacement of deteriorated water mains and associated valves, fire hydrants and service lines. This program is for the replacement of deteriorated water mains, associated fire hydrants and service connections. Work is scheduled in conjunction with other infrastructure replacement and upgrading projects; increase of 0.5 FTE for 2009.

- **New Trunk Watermains** –
  - **Courtney Street from Dalgliesh Drive to 500 m North** – In 2009, $700,000 is provided for the detailed design and construction of a trunk water main along Courtney Street from Dalgliesh Drive to 500 m north of Whelan Drive.
  - **East of Woodland Grove Drive** - In 2009, $1,200,000 is provided for the design and construction of water trunk mains to service the area East of Woodland Grove Drive and north of Arcola Avenue.
  - **Parliament Avenue from Pasqua Street to 800 m West** - In 2009, $230,000 is provided for the detailed design and construction of a trunk water main along Parliament Avenue from Pasqua Street to 800 m west of Pasqua Street.
  - **McCarthy Blvd from Wadge Street to Diefenbaker Drive** - In 2009, $600,000 is provided for the detailed design and construction of a trunk water main along McCarthy Blvd from Wadge Street to Diefenbaker Drive.
  - **Gordon Road from Lewvan Drive to 500 m West** - In 2009, $1,500,000 is provided for the detailed design and construction of a trunk water main along Gordon Road from Lewvan Drive to 500 m west.
  - **Woodland Grove Drive from Arcola Avenue to 250 m North** - In 2010, $110,000 is required for the detailed design and construction of a trunk water main along Woodland Grove Drive from Arcola Avenue to 250 m north.

- **Albert Street from Ring Road to Norman MacKenzie Road** - In 2010, $300,000 is required for detailed design and in 2011, $2,600,000 is required for the construction of a trunk water main along Albert Street from Whelan Drive to Norman MacKenzie Road.

- **Watermain Dead-End Connections** – $100,000 is provided each year to eliminate, where possible, dead-ends on watermains. Where dead-ends cannot be eliminated, a flush out is provided to allow thorough flushing of the watermain. The project is intended to eliminate water quality problems caused by dead-ends and to ensure the best practical water flows to fire hydrants for fire protection. Based on current funding levels, this initiative will be completed in approximately ten years.

- **Hydrant Replacement** – $50,000 is provided in 2009 and $150,000 each year thereafter to replace old fire hydrants at locations where streets and sidewalks are being replaced and to replace hydrants that can no longer be repaired. Fire hydrants are also replaced through the water infrastructure renewal program. Malfunctioning hydrants beyond repair are replaced immediately and obsolete slide gate hydrants are replaced with compression style hydrants.

- **Water Service Line Replacement** – $5.8 million is provided over five years to fund the replacement of approximately 7,000 polybutylene water service lines. The polybutylene service lines are subject to failure resulting in high costs for repairs. Replacement of these lines will provide a long-term solution.

Other Capital Projects

Funding will cover consulting, contractors, property, materials and any other work, resources, staff, technologies or support related to each of the projects described below.

- **Trench Settlement Remediation** – $50,000 is provided in 2009 to control settlement at watermain replacement locations. Cracking and settling of sidewalk, curb, gutter and pavement occur as a result of backfill settlement at watermain work locations, resulting in drainage problems. This also addresses deficiencies in past capital works for Water Supply, Pumping and Distribution. The deficiencies are repaired between two and five years after the project is complete.

- **AMR System Equipment Replacement Program** – In order to obtain readings from AMR meters, the City has deployed a number of hand-held and vehicle-mounted (VXU) radio-read devices. These devices are warranted and can be repaired and upgraded for a period of time, but upgrades to the technology and necessary replacements due to damaged equipment require the implementation of a replacement program for these devices. The City operates 9 handhelds and 2 VXUs. The program assumes replacement of 2 handhelds per year, at a cost of $10,000 per unit and one VXU every three years, at a cost of approximately $20,000.

- **Global Transportation Hub (GTH)** – The relocation of the CPR inter-modal facility to a new site recently annexed to the City, east of Pinkie Road and south of Dewdney Avenue has attracted companion industrial development. The first user of the new GTH is Loblaw Companies Ltd., currently building the first phase of a 1,000,000 square-foot distribution centre with expected completion in early 2010. Utility services provided to the GTH that are funded by the Provincial Municipal Economic Enhancement Program (MEEP) total $3,540,000, and aid in the provision of substantial water, wastewater, and drainage infrastructure for the GTH.

- **Bulk Water Loading Station** – A new bulk water loading station is required to replace the existing facility. Benefits included reduced risk of backflow and water contamination, elimination of traffic congestion, and improved security concerns at the Public Works yard. New increased rates for the supply of bulk water came into effect on January 1, 2008.

Wastewater Collection and Treatment

Capital Summary ($000's)	2009	2010	2011	2012	2013
Capital Expenditures					
1. Wastewater Collection:					
- Trunk Main Upgrading	**1,100**	1,100	1,100	1,100	1,100
- Trench Settlement Remediation	**35**	35	35	35	35
- IMF-Wastewater Works	**-**	-	-	-	-
- Wastewater Trunk Mains	**1,490**	2,500	850	500	500
- Vacuum Trailer	**115**	-	-	-	-
- McCarthy Pump Station Upgrade	**3,810**	-	-	-	-
- Pumping Station Upgrade	**100**	650	500	450	300
- Infrastructure Renewal	**2,800**	3,000	3,000	3,200	3,400
2. Wastewater Treatment:					
- Wastewater Treatment Plant Expansion	**6,429**	32,500	63,580	27,830	-
- Wastewater Treatment Plant Improvements	**1,428**	3,050	-	1,430	-
- Wastewater Treatment Plant Refurbishing	**1,100**	220	220	220	220
- Upgrade Forcemains-McCarthy Pump Station to WWTP	**6,550**	3,000	-	-	-
- Asset Management	**100**	-	-	-	-
- Waste Hauler Station Development	**-**	-	1,738	-	-
Total Expenditures	**25,057**	46,055	71,023	34,765	5,555
Capital Funding					
General Utility Reserve	**6,778**	8,005	6,593	5,005	3,955
Service Agreement Fees - Utility	**2,647**	8,350	12,294	5,509	500
Debt	**15,632**	29,700	52,136	24,251	1,100
Total Funding	**25,057**	46,055	71,023	34,765	5,555

Wastewater Collection

Funding will cover consulting, contractors, property, materials and any other work, resources, staff, technologies or support related to each of the projects described below.

- **Trunk Main Upgrading** – $5.5 million is provided from 2009 to 2013 to undertake wastewater trunk system upgrading and refurbishing identified by performance and condition investigations. Upgrades will consist mostly of pipe relining. Where the condition of the pipe has deteriorated to the point that relining is no longer an option, open trench method will be used to replace the line.

- **Trench Settlement Remediation** – $35,000 is provided each year to address deficiencies in past capital works for Wastewater Collection and Treatment. The funding is used to repair asphalt and concrete deficiencies that result from underground utility construction. The deficiencies are repaired between two and five years after the project is complete and involves locations identified after the expiration of the warranty period (typically 1 year).

- **Wastewater Trunk Mains**

  - **Wastewater Trunk Main Construction West of Lewvan Drive** - From 2009 through 2013, $500,000 is provided annually for the construction of oversized trunk mains in the areas west of Lewvan Drive.

- **Wastewater Trunk Mains East of Woodland Grove Drive** - In 2009, $400,000 is provided for the design and construction of sanitary sewer trunk mains to service the area East of Woodland Grove Drive and north of Arcola Avenue.
- **Southeast Wastewater Trunk Main Oversize Rebates** - In 2009, $150,000 is provided for sanitary sewer trunk main oversize rebates for the area east of Woodland Grove Drive and north of Arcola Avenue.
- **Wastewater Trunk Main - Rochdale Boulevard from 320 m east of Pasqua to the Albert St Trunk Sewer** - In 2009, $150,000 is provided for the detailed design of a trunk water main along Rochdale Blvd from east of Pasqua St to Albert St and in 2010, $1,350,000 is provided for construction.
- **Wastewater Trunk Main - McCarthy Blvd from Wadge Street to Diefenbaker Drive** - In 2009, $175,000 is provided for the detailed design and construction of a wastewater trunk main along McCarthy Blvd from Wadge Street to Diefenbaker Drive.
- **Wastewater Trunk Main - Prince of Wales Drive from Wascana Gate North to Arcola Avenue Trunk Sewer** - In 2009, $90,000 is provided for the detailed design of a trunk water main along Prince of Wales Drive from Wascana Gate North to the Arcola Avenue trunk main and in 2010, $600,000 is provided for construction.
- **Wastewater Trunk Main - Riverside Development to the Dorsey Place Trunk Sewer** - In 2010, $40,000 is provided for the detailed design of a trunk wastewater main from the Riverside Development to the Dorsey Place trunk main and in 2011, $350,000 is provided for construction.

- **Vacuum Trailer** – $115,000 is required for rent-to-purchase of a vacuum trailer for the CCTV Operation. Currently, there is only a jet trailer for the operation. The Vacuum Trailer is designed to vacuum debris out of sewer mains and catch basins and is used in conjunction with the Jet Trailer. The unit will primarily be used for the CCTV operation, but may also be used for other operations. Having the Vacuum Trailer will save time and money, as currently the large and expensive Jet/Vacuum combination units are being used when required. By operating in this manner the sewer cleaning program is compromised because it is put on hold while working on the CCTV program.

- **McCarthy Pump Station Upgrade** – The station screening system requires replacement and incorporation of an odour control system. $3,810,000 is provided in 2009 to replace valves, screens, odour abatement and pump dry well repairs and bypass pump feature to allow wet side maintenance.

- **Pumping Station Upgrade** – $2.0 million is provided from 2009 to 2013 for rehabilitating and/or replacing existing wastewater pumping stations. This includes upgrades required to the pumping station in the CPR Annex that will be undertaken as part of the drainage improvement project. $50,000 is provided in 2009 and 2011 to continue the installation of the new supervisory control and data acquisition (SCADA) system in wastewater pumping stations.

- **Infrastructure Renewal** – $15.4 million is provided in the period 2009 to 2013 to fund renewal of the wastewater collection system, including collection lines, catch basins, manholes and connections. Collections lines are surveyed by camera and the condition rated so that a program can be developed each year according to the needs. The inspection and relining program will be expanded in 2009 to include 50 to 70 mains outside the combined works locations in order to reduce the number of emergency replacements, which are much more expensive; increase of 0.5 FTE for 2009.

Wastewater Treatment

Funding will cover consulting, contractors, property, materials and any other work, resources, staff, technologies or support related to each of the projects described below.

- **Wastewater Treatment Plant Expansion** – Expansion projects include major treatment plant changes to meet more stringent regulatory requirements as well as provide expanded hydraulic and process capability to meet larger wastewater flows associated with future city growth. The regulatory requirements of the Province require the City to meet the nitrogen reduction requirement by the end of 2011. The Federal requirements under The Environmental Protection Act and The Fisheries Act require the City to develop and implement a pollution prevention plan that will result in the reduction of ammonia toxicity in the final effluent discharged to the Wascana Creek/Qu'Appelle River system. The increased treatment requirements result in a need to replace the biological treatment plant. The investigations to date lead to a Biological Nutrient Removal Plant (BNR), which will meet all environmental requirements. The schedule is for pre-design work to commence in 2009 with final delivery and commissioning of an expanded and enhanced treatment plant in 2012. The total estimated projected cost is $130.3 million allocated as follows:

  In 2009, $6,429,000 will be for the completion of design and initiation of WWTP Upgrade Expansion, Maintenance Building, Methane Gas Utilization System and Water Supply and cooling system upgrade. In 2010, 2011 and 2012: $32,500,000, $63,580,000 and $27,830,000 respectively will be for the construction of WWTP Upgrade Expansion.

  - Pre-design engineering will commence in 2009. During this step, the process options and treatment capacities criteria as well as more refined capital and operating costs are determined.
  - Detailed engineering for the expanded and enhanced treatment plant will commence in 2009/10. During this phase of engineering detailed civil, mechanical, electrical and control systems designs and construction drawings are completed in preparation for contract tendering.
  - Construction of the plant expansion is scheduled to commence in 2010 with completion and commissioning in 2012.

  The estimated costs are preliminary and will be refined through the pre-design and detailed engineering stages. Partial funding will be provided through Servicing Agreement Fees, as the enhanced and increased capacity of the new plant will accommodate increased flows from new development.

- **Wastewater Treatment Plant Improvements** – Funding of $5,908,000 is provided in the period 2009 to 2013. The projects and proposed schedule are as follows: Provision of $1,428,000 in 2009 for improvement to the Maintenance Management system, grit removal process engineering, UV process improvements, Primary Plant HVAC, and process water storage needs. A provision in 2010 of 3,050,000 will be for grit removal process improvements and plant site pavement. Provision in 2012 of $1,430,000 is for the conversion of the existing Tertiary Clarifier Building to an expanded Maintenance Shop.

- **Wastewater Treatment Plant Refurbishing** – This program provides funding for major maintenance projects beyond the regular operating and maintenance budget. For 2009 to 2013, $1,980,000 is provided as follows: 2009 funding includes $220 thousand for the digester area refurbishing, and $350,000 for refurbishment of the traveling bridges, scum handling and auxiliary equipment in the primary sedimentation area. In 2010 to 2012, $165 thousand will be provided each year to undertake maintenance work to refurbish corroded concrete, process piping and valves. In 2010 to 2013, $55 thousand will be provided each year for refurbishing the secondary treatment lagoon dyke.

- **Upgrade Forcemain McCarthy to WWTP** –The original 42 inch steel forcemain (one of two forcemains from McCarthy Pump Station to the Wastewater treatment Plant) was constructed in 1958 and is in poor to marginal condition. An allocation of $6,100,000 was provided for pipeline condition assessment, engineering and refurbishing of the oldest steel force main in 2008. A further allocation in 2009 of $6,550,000 and $3,000,000 in 2010 is for completing the work on the old forcemain and for refurbishing of the concrete forcemain line and associated piping, valves, valve chamber, and inspection of the 1990 steel forcemain.

- **Asset Management** – $100,000 is required in 2009 to undertake criticality assessments based on infrastructure performance that will be used as a foundation to develop management and maintenance strategies for the system. It is possible a further request may be formally tendered in the future to develop service level targets and asset management strategies for system repair and rehabilitation pending the results of the criticality assessment.

- **Waste Hauler Station Development** – The McCarthy Pump Station also serves as a dumping station for sewage and liquid wastes from within the city and surrounding areas by commercial liquid waste haulers. Operation of the dump station creates local traffic problems and contributes to the odour problems. Plans and funding options to re-locate the dump station to a new suitable location. An allowance of $1,738,000 is provided in 2011 for this project.

Drainage

Capital Summary ($000's)	2009	2010	2011	2012	2013
Capital Expenditures					
1. Drainage System Upgrading:					
- Glencairn	**1,300**	2,100	850	2,200	1,000
- Trench Settlement Remediation	**35**	35	35	35	35
- Detention Pond-Albert St and Hwy 11	**-**	-	-	-	2,500
- Ditch Realignment Armour Rd to McCarthy Blvd	**300**	-	-	-	-
- Rehabilitate Ditch-McCarthy Blv Culvert Crossing to CNR	**-**	250	-	-	-
- Culverts & Ditch-CNR to Courney St	**375**	-	-	-	-
- Ditch Replacement-Courtney St to Pinkie Rd to Wascana	**-**	-	-	-	3,200
- Various Detention Ponds	**-**	11,000	4,600	-	3,800
- Chula Creek Channelization-Phase 1	**-**	660	-	-	-
- Detention Pond & Trunk Sewer to Chula Creel S of Arcola	**-**	1,800	-	-	-
- Storm Channel-North of 25th Ave	**4,300**	-	-	-	-
- Culvert Crossings at Gordon Rd	**-**	-	-	-	500
- Storm Channel	**600**	-	-	-	-
- Harbour Landing Storm Channel-South of 25th Ave	**3,000**	-	-	-	-
- Harbour Landing Detention Ponds	**1,200**	1,040	-	-	-
- Arcola Ave Detention Pond	**450**	6,400	-	-	-
- Whitmore Park Drainage Improvements	**200**	2,000	-	-	-
- Catch Basin Installations	**50**	50	50	50	50
- Drainage Pumping Station Upgrading	**300**	400	100	2,000	-
- Drainage Infrastructure Renewal	**1,800**	2,000	2,200	2,400	2,600
- Dykes, Drainage Channels Lake Improvements	**400**	200	200	200	200
Total Expenditures	**14,310**	27,935	8,035	6,885	13,885
Capital Funding					
General Utility Reserve	**4,085**	5,785	1,435	2,485	1,285
Service Agreement Fees - Utility	**10,075**	21,150	4,600	-	10,000
Developer Funding	**150**	-	-	-	-
Debt	**-**	1,000	2,000	4,400	2,600
Total Funding	**14,310**	27,935	8,035	6,885	13,885

Drainage

Funding will cover consulting, contractors, property, materials and any other work, resources, staff, technologies or support related to each of the projects described below.

- **Glencairn Drainage Improvements** – Funding of $1.3M in 2009 provides for completion of the construction of the Stewart Russell Park detention site and for the pre-design of the Victoria Avenue southwest quadrant detention site. Funding of $2.1 million in 2010, $850,000 in 2011, $2.2 million in 2012, and $1 million in 2013 is required for detailed design and construction of the Victoria Avenue southwest and southeast quadrant detention sites.

- **Trench Settlement Remediation** – $35,000 is provided each year to address deficiencies in past capital works for Drainage. The funding is used to repair asphalt and concrete deficiencies that result from underground utility construction. The deficiencies are repaired between two and five years after the project is complete and involves locations identified after the expiration of the warranty period (typically 1 year).

- **Detention Pond - Albert Street at Highway No.11** - In 2013, $2,500,000 is required for design and construction of the new detention pond to serve the newly developed area west of Albert Street and north of Highway No.11, in the Northwest of the City.

- **Ditch Realignment - Armour Road to McCarthy Boulevard** - $300,000 is provided in 2009 for the design and construction of drainage ditch realignment from Armour Road/Diefenbaker Drive to McCarthy Boulevard for Lakeridge Addition.

- **Rehabilitate ditch from McCarthy Boulevard culvert crossing to CNR crossing** - In 2010, $250,000 is required for rehabilitation of the ditch from McCarthy Boulevard to CNR crossing for development of the area north of Lakewood, known as Skyview.

- **Culverts and ditch - CNR to Courtney Street** - In 2009, $375,000 is provided for culverts and the drainage ditch from the CNR crossing parallel to the quarter section line on the north side of the Maple Ridge development to the new crossing location at Courtney Street.

- **Ditch Realignment - Courtney Street to Pinkie Road to Wascana Creek** - In 2013, $3,200,000 is required for realigning the ditch from Courtney Street to Pinkie Road and onward to Wascana Creek via a rehabilitated Pinkie Road east ditch.

- **Various Detention Ponds**

  - **Detention pond (A) - North of CP Railway and West of Winnipeg Street**- In 2013, $1,100,000 is required for a new detention pond to serve the newly developed area North of CP Railway and West of Winnipeg Street, in the Northwest of the city.
  - **Detention pond (B) - North of Alport Crescent and West of CP Railway** - In 2013, $600,000 is required for a new detention pond to serve the newly developed area North of Alport Crescent and West of CP Railway, in the Northwest of the city.
  - **Detention pond (C) - East of Albert Street and North of Norman MacKenzie Road** - In 2013, $2,100,000 is required for a new detention pond to serve the newly developed area East of Albert Street and North of Norman MacKenzie Road, in the Northwest of the city.
  - **Detention pond (E) - Pasqua Street at Rochdale Boulevard** - In 2010, $4,500,000 is required for a new detention pond east of Pasqua Street south of Rochdale Boulevard to serve the newly developed area of Argyle North, in the Northwest of the city.
  - **Detention pond (F) - Pasqua Street at Rochdale Boulevard** - In 2010, $1,100,000 is required for a new detention pond east of Pasqua Street and north of Rochdale to serve newly developed area of Argyle Park North, in the Northwest of the city.

- **Detention pond (H) - McCarthy Boulevard at Rousseau Crescent** - In 2010, $3,600,000 is required for a new detention pond to serve the newly developed area of Lakeridge Addition, in the Northwest of the city.
- **Detention Pond North of Arcola Ave, East of Woodland Grove to Chuka Creek** – In 2010, $1,800,000 is required for a new detention pond as a storm water buffer to serve the "Creeks" subdivision.
- **Detention pond (J) - CNR Railway north of Hird Crescent -** In 2011, $2,200,000 is required for a new detention pond east of CNR railway and north of Hird Crescent to serve the newly developed area Lakeridge Addition, in the Northwest of the city.
- **Detention pond (L) - East of Courtney Street and North of Maple Ridge Subdivision** - In 2011, $2,400,000 is required for a new detention pond to serve the newly developed area East of Courtney Street and North of Maple Ridge Subdivision, in the Northwest of the city.

- **Chuka Creek Channelization - Phase 1** - In 2010, $660,000 is required for Channelization of Chuka Creek is required to serve the newly developed area of The Creeks, in the Southeast of the city.

- **Detention Pond and trunk sewer to Chuka Creek south of Arcola** - In 2010, $1,800,000 is required for a detention pond and trunk sewer south of Arcola Avenue in the newly developed area of The Creeks, in the Southeast of the city.

- **Harbour Landing Storm Channel - North of 25th Avenue** - In 2009, $4,300,000 is provided for storm channel excavation from Regina Avenue to 25th Avenue.

- **Culvert Crossings at Gordon Road** - In 2013, $500,000 is required for culvert crossings at the storm channel at Gordon Road.

- **Pipeline Crossing Siphon at Harbour Landing Storm Channel** - In 2009, $600,000 is provided for a pipeline crossing siphon at the storm channel in Harbour Landing.

- **Harbour Landing Storm Channel - South of 25th Avenue** - In 2009, $3,000,000 is provided for storm channel excavation from 25th Avenue to Highway No. 1.

- **Harbour Landing Detention Ponds**

  - **Harbour Landing Detention Pond - MR4** - In 2009, $400,000 is provided for excavation, coarse grass seeding, and outlet structure from the detention pond to the storm channel.
  - **Harbour Landing Detention Pond - MR5** - In 2009, $400,000 is provided for excavation, coarse grass seeding, and outlet structure from the detention pond to the storm channel.
  - **Harbour Landing Detention Pond - MR6** - In 2009, $400,000 is provided for excavation, coarse grass seeding, and outlet structure from the detention pond to the storm channel.
  - **Harbour Landing Detention Pond - MR7** - In 2010, $170,000 is required for excavation, coarse grass seeding, and outlet structure from the detention pond to the storm channel.
  - **Harbour Landing Detention Pond - MR8** - In 2010, $200,000 is required for excavation, coarse grass seeding, and outlet structure from the detention pond to the storm channel.
  - **Harbour Landing Detention Pond – MR9** - In 2010, $200,000 is required for excavation, coarse grass seeding, and outlet structure from the detention pond to the storm channel.
  - **Harbour Landing Detention Pond – MR10** - In 2010, $230,000 is required for excavation, coarse grass seeding, and outlet structure from detention pond to storm channel.
  - **Harbour Landing Detention Pond - MR11** - In 2010, $240,000 is required for excavation, coarse grass seeding, and outlet structure from detention pond to storm channel.

- **Arcola Avenue Detention** – A study previously carried out on Drainage Area #8 identified significant problems with the storm water and drainage management system. The study identified the need for a detention facility in the area bounded by Winnipeg Street, Arcola Avenue and Victoria Avenue. Preliminary work was started in 2007 with the purchase of land. A pre-design and detailed design will

be completed in 2009. Construction will likely occur in 2010-2011. Arcola Avenue is scheduled to be widened in 2013 and to be completed by 2017.

- **Whitmore Park Drainage Improvements** – A drainage detention facility will be provided in Richardson Park to provide additional relief in the Whitmore Park neighbourhood. $200,000 is allocated in 2009 for the detailed design and tendering, and $2,000,000 is provided for the drainage system construction in 2010.

- **Catch Basin Installations** – $50,000 is provided each year for the installation of catch basins at various locations on streets and in easements where severe ponding is a problem. Based on past construction, the average cost per location is $8,000.

- **Drainage Pumping Station Upgrading** – $800,000 is provided from 2009 to 2011 for electrical and mechanical upgrades at various pumping stations. $2.0 million is provided in 2012 to upgrade the Albert St. and CPR pumping station from a 1:10 year rainstorm level of service to a 1:25 year rainstorm level of service.

- **Drainage Infrastructure Renewal** – This program replaces or rehabilitates substandard drainage system lines in conjunction with scheduled reconstruction work at chronic problem locations. $11 million is provided for the period 2009-2013. Drainage lines are surveyed by camera and the condition rated so that a program can be developed according to the priorities in each year. The general capital and utility capital budgets fund the renewal of their respective infrastructure components. This program results in a reduction in the number of drainage system emergency repairs that must be completed each year.

- **Dykes, Drainage Channels, Lake Improvements** – $400,000 is provided in 2009 for rehabilitation and improvements to Wascana Creek dykes, drainage channels and drainage detention lakes. $200,000 is provided from 2010 to 2013. Dredging of storm channels and retention lakes is undertaken to remove sediment, restore hydraulic capacity and improve storm water quality.

Utility Capital Funding

Funding for the Water and Sewer Utility Capital Program is primarily from the following sources:

- General Utility Reserve.
- Utility Servicing Agreement Fees.
- Utility Servicing Agreement Fee Credits.
- Federal and Provincial Infrastructure Programs.
- Debt.

General Utility Reserve

The General Utility Reserve is funded through the operating surplus of the utility. Each year the utility generates a surplus, a portion of which is transferred to the general operating and capital budgets, with the balance transferred to the General Utility Reserve. The reserve is primarily used to fund capital projects, but is available should there be an operating shortfall. The following table provides a projection for the General Utility Reserve.

General Utility Reserve ($000's)

	2009	2010	2011	2012	2013
Reserve Balance - Start of Year	**6,843**	**8,818**	**9,624**	**8,094**	**5,534**
Net Operating Surplus	17,766	19,469	17,332	15,636	22,717
Capital Program Requirement[1]	(15,791)	(18,663)	(18,862)	(18,196)	(11,724)
Reserve Balance - End of Year	**8,818**	**9,624**	**8,094**	**5,534**	**16,527**

Note 1: The Capital Program Requirement reflects an estimated inflation rate applied to capital requirements. The 2009 – 2013 Utility Capital Program is presented in current dollars (without inflation). The utility model incorporates projected increases in revenues and expenditures due to inflation. The net operating surplus reflects future projected increases and as such, the inflationary projection for capital program requirements is also used in this table.

Servicing Agreement Fees

During 2007, the City completed a major review of the servicing agreement fee policy. The review included estimates of the capital requirements related to new development over the next 20 years. Regina had reached a threshold in that the majority of its existing developments were virtually complete, and a significant investment in infrastructure was required for the City to grow. Regina's servicing agreement fees were significantly lower than those in most other cities across Canada.

New policies were adopted by City Council in 2007 based on appropriate cost sharing between new developments and existing taxpayers. The fees have increased significantly since 2007 years with a 2009 rate of $212,134 per hectare, up from $183,405 in 2008. Despite the increase in fees, which now include a financing cost element, significant additional funding is required to support these new neighbourhoods, and there will be a significant cash outflow required by the City to fund its share of

infrastructure paid for through servicing agreement fees. This amount will be repaid over the next decade through servicing agreement fees as new development proceeds.

It is clear that the usual approach, whereby the City funds infrastructure in advance of development for roadways and water, wastewater and drainage infrastructure is not workable given the City's limited financial resources. New approaches, including developer front-ending agreements and phasing of development, will be used to help balance the cash requirements.

Servicing Agreement Fees (SAF) are pursuant to *The Planning and Development Act, 2007* and are collected when a servicing agreement is entered into between the City and a developer. The agreements require a payment to the City of a predetermined amount per hectare of land within the development area. The funds are intended to be used towards the construction of infrastructure to support new development. Funds are not managed on a specific project by project basis because infrastructure demands related to new development do not necessarily occur only within the particular development. For example, each new development places some burden on wastewater treatment facilities and major arterials.

In the case of roadways, water, and sewer costs for development, the City would normally incur the costs prior to the full development of an area. In other words, the costs are front ended through City funding and paid back over time through collection of servicing fees. Parks and recreation infrastructure costs are generally incurred later in the process.

For 2009, the utility servicing agreement fees are set at $96,353 per hectare of land within the development area. The payment schedule requires 30% upon execution of a servicing agreement, another 40% within nine months and the balance within a further nine months. Eligibility of funding is by policy of City Council and includes:

- 100% of funding for the cost of trunk water mains larger than 250 mm in diameter with no service connections permitted.
- A portion of the cost to construct water mains larger than 250 mm in diameter.
- 100% of funding for wastewater collection trunks which are 300 mm or greater in diameter with no service connections permitted.
- A portion of the cost to construct wastewater collection mains larger than 300 mm in diameter.
- 100% of funding for wastewater pump or lift stations that are a component of a regional servicing plan.
- 18% of the funding for expansion to the wastewater treatment plant for capacity for new development.
- 100% of the funding for servicing design criteria review studies for the servicing of new land development.
- 100% of funding for drainage trunks 1,350 mm or greater in diameter with no service connections permitted.
- A portion of the cost to construct drainage mains larger than 1,350 mm in diameter.
- 100% of funding for drainage lift stations that are an approved component of a regional drainage plan.
- 100% of funding for a dry bottom detention facility (or the equivalent for a dry facility if a wet retention pond is constructed) if the pond is an approved component of a regional drainage plan.

- 100% of funding for new or upgraded storm channels that are an approved component of a regional drainage plan.

- 100% of the funding for full urbanization of the Pilot Butte and Chuka Creek adjacent to undeveloped lands if the improvements are part of an approved regional drainage plan.

- 100% of the funding for master drainage studies which are part of an approved regional plan of undeveloped land.

Revenue from Servicing Agreement Fees is recognized when the funds are spent on an eligible project. Historically, capital projects eligible for Servicing Agreement Fees funding have been undertaken ahead of the funds being available resulting in a shortfall in Servicing Agreement Fees funding. The projections have been based on information provided by the development community, and estimates from Development Engineering for 2009 to 2013. The projects of servicing agreement fees involves considerable uncertainty as future levels of growth are difficult to predict.

Servicing Agreement Fees ($000's)

	2009	2010	2011	2012	2013
Balance - Start of Year	**(990)**	**(12,362)**	**(37,722)**	**(48,856)**	**(48,605)**
Servicing Agreement Fees[1]	5,760	5,760	5,760	5,760	-
Capital Program Requirements[1]	(17,132)	(31,120)	(16,894)	(5,509)	(10,500)
Balance - End of Year	**(12,362)**	**(37,722)**	**(48,856)**	**(48,605)**	**(59,105)**

Note

1. *The projected Servicing Agreement Fees incorporate the approved rates for 2008, and increases in future years for inflation. The capital program requirements also incorporate projected increases due to inflation.*

A review of the SAF Policy in 2007 identified the need to design and build some infrastructure projects in advance of adequate fees being collected by the City. For that reason, developers are entering into front ending servicing agreements with the City and constructing work that would normally be funded through the SAF reserve funds. Through these agreements, the developers are entitled to an offset in the form of servicing agreement fee credits that would otherwise be payable. The servicing agreement fee credit concept allows the development community to proceed with new subdivisions without waiting for the City to construct the infrastructure to support the development.

The table below shows the projected servicing fee credits for 2009 to 2013 assuming all credits are used within a five-year period. The projection of front-ended activities and their timing and subsequent redemption of credits, for which there is no historical pattern, contains a high degree of uncertainty.

Servicing Agreement Fee Credits ($000's)

	2009	2010	2011	2012	2013
Balance - Start of Year	**-**	**800**	**800**	**1,800**	**1,800**
Front-ended Capital Projects [1]	8,000	6,000	5,000	3,000	-
Servicing Agreement Credit Fee Reductions[2]	(7,200)	(6,000)	(4,000)	(3,000)	(1,800)
Balance - End of Year	**800**	**800**	**1,800**	**1,800**	**-**

Note:

1. *The front ended capital projects incorporate projected increases for inflation.*
2. *The Servicing Agreement Credit Fee Reductions assume repayment over a five year period.*

Federal/Provincial Infrastructure Programs

The four-year Municipal Rural Infrastructure Program (MRIF) started in 2005, with $1.7 million in funding available each year for Regina. City Council approved the allocation of the funding to Water and Sewer Utility projects in each year from 2005 to 2008.

The 2007/08 Federal Budget rolled the MRIF program into the "Building Canada Fund" and the program has been continued under the 2008/09 Federal Budget. Program criteria and allocations will be finalized once an agreement between the Province of Saskatchewan and the Federal Government has been negotiated. At this point, any new criteria and allocations are not yet communicated to the City.

Debt Financing

Section 135 of *The Cities Act* creates the authority to issue debt to finance capital projects. While debt is a source of capital financing, ultimately the cost of the debt (principal and interest) has to be funded through the utility operating budget. The following table is a summary of the outstanding debt and the debt maturing each year.

Schedule of Debt Maturities ($000's)

	Debt Issues				
Year	$13 Million May 1998	$40 Million Nov 2002	$6 Million May 2004	Total	Per Cent of Total
2009	-	4,000	600	4,600	23.5%
2010	-	4,000	600	4,600	23.5%
2011	-	4,000	600	4,600	23.5%
2012	-	4,000	600	4,600	23.5%
2013	-	-	600	600	3.1%
2014	-	-	600	600	3.1%
Total	-	16,000	3,600	19,600	100.0%

In most instances, the debt issue in a particular year provides the debt financing required for several years of the Utility Capital Program.

In the 2009 – 2013 Utility Capital Program, debt requirements are:

- $16 million in 2009.
- $40 million in 2010.
- $57 million in 2011.
- $30 million in 2012.
- $5 million in 2013.

The utility model includes funding for debt issuance costs and the repayment of projected debt issues based on a ten-year term and an interest rate of 5%.

The future debt requirements are based upon projected annual utility rate increases of 9% each year for 2009 and 2010. The future debt requirements are subject to change, as capital requirements in future years may change, the projected cost of requirements could change, or revenues generated from rate increases may change. In addition to the projected debt required to fund the 2009 – 2013 Utility Capital Program, based on current revenue and expenditure projections in the utility model, there are additional

debt requirements beyond 2013. The following graph shows projected utility debt levels incorporating the existing debt and the projected additional debt for 2009 through 2013.

Utility Debt Projections